THE AMERICAN

GAS LIGHT JOURNAL

INC.

PUBLISHED WEEKLY, AT 42 PINE ST.

VOLUME CII. No. 8.
Whole No. 2,072.

NEW YORK, MONDAY, FEBRUARY 22, 1915.

Subscription, $3 Per Year.
$4 Canada, $5 Foreign.

LIBRARY OF CONGRESS,
FEB 23 1915
SMITHSONIAN DEPOSIT.

Riter-Conley Manufacturing Company

STEEL CONSTRUCTION

Pittsburgh

INDEX TO CONTENTS, PAGE 128.

ADVERTISERS' INDEX, PAGE 26.

THE UNITED GAS IMPROVEMENT COMPANY,

PHILADELPHIA.

—•—

BUILDERS OF

THE STANDARD DOUBLE SUPERHEATER

LOWE WATER GAS APPARATUS.

—•—

ACCURATE MEASUREMENT

OF

AIR AND STEAM SUPPLY

(PATENTED),

AFFORDING { **PERFECT CONTROL OF GENERATOR FIRE CONDITIONS.**

PRODUCING { **UNIFORM RESULTS. HIGHEST EFFICIENCIES.**

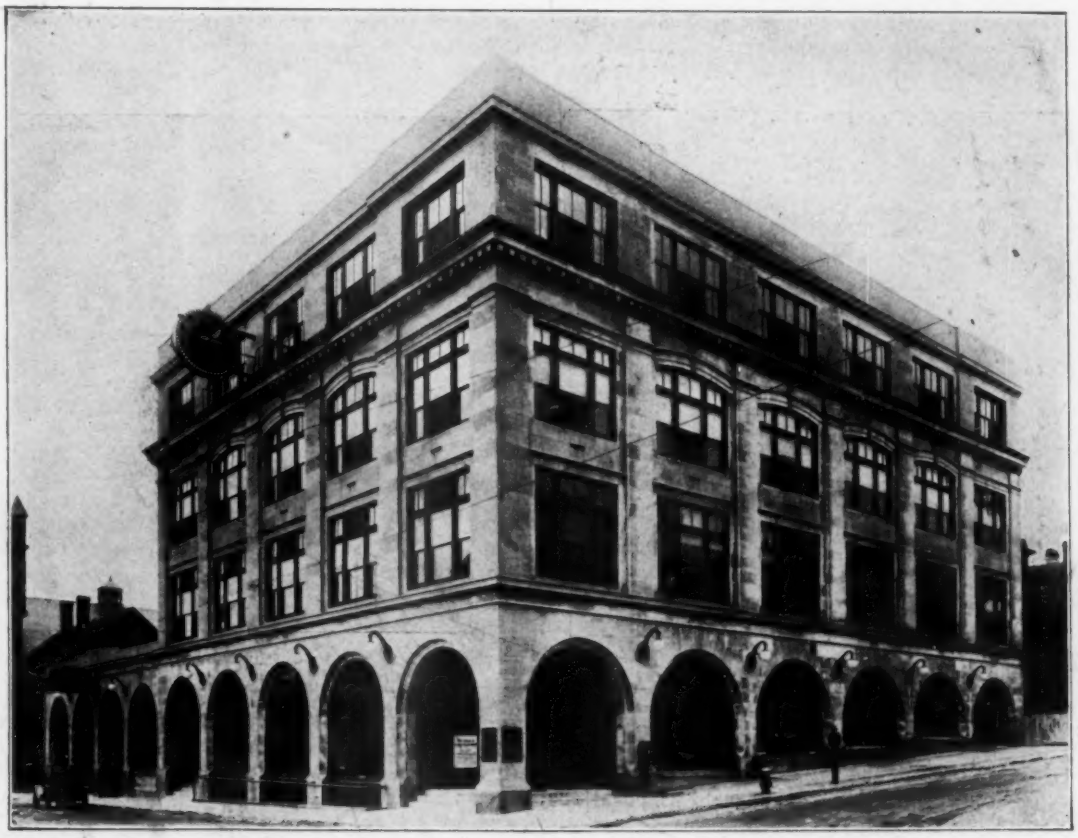
THE AMERICAN
GAS LIGHT JOURNAL
INC.

VOL. CII., No. 8. NEW YORK, FEBRUARY 22, 1913. WHOLE No. 2,072

OFFICE BUILDING OF THE NEW BEDFORD GAS AND EDISON LIGHT CO.

The new building occupied by the New Bedford (Mass.) Gas and Edison Light Company is as near an ideal home for a public service company as could be built. All the details have been arranged to make the work of the employees as easy as possible. Even the wiring and piping of the building was the result of a long and careful study by experts of the company, and the lighting system is said to be one of the most complete in the country. The officials boast that there is nothing in the building that is not essential, and there is certainly a great quantity of apparatus for the convenience of the company's workers and its customers.

The building was started the first of June, 1913, and was completed in October, 1914, but we have waited until now for good photographs of it.



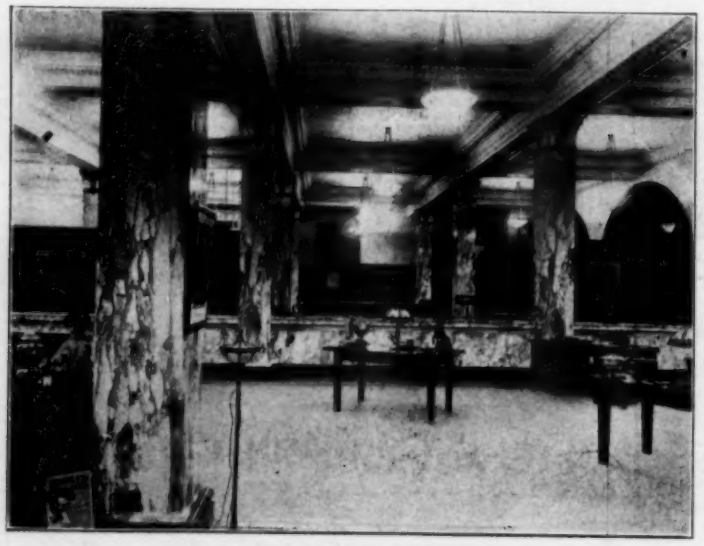
The Purchase street side of the main, or street floor, is devoted to show purposes for the displaying of gas stoves and electric and gas appliances. Long tables in the centre of the open floor space before the cashiers' desks are also devoted to the showing of goods. The small articles, mantles, lamps and others for which there is a daily call, are kept in drawers of a table in the centre of the room.

Midway between the east and west walls of the main office extends a long marble counter, at one end of which is an office for the registrar, where all "kicks" may be made. At the other end of the counter is the downstairs office of the treasurer. Here also are the three cashiers' cages. Behind the counter are the desks for the bookkeepers of the gas and electrical departments, and the telephone switchboard is in the northwest corner.

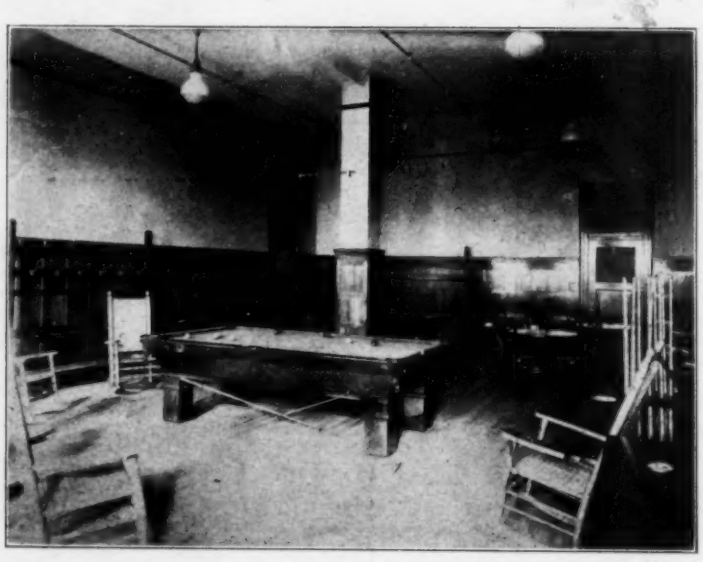
The floor of this main office is of a composition that resembles linoleum, chosen because of its satisfactory service in the Grand Central station in New York. The columns supporting the paneled ceiling are of Brescia Opal Egyptian marble, with black Port d'Oro marble bases. The lighting on the street floor is by the semi-indirect system, with handsome white bowls hung at the centre of each panel.

The door to the general offices is on Purchase street, just north of the garage entrance. The hallway is finished in statuary vein marble and the stairway is of the same Italian marble. A passenger elevator runs from the basement to the top floor.

The main room on the second floor is devoted to a display of gas and electric lighting fixtures. Here hundreds of chandeliers and brackets and table lights are shown. On the east side of the second floor are the private offices of the officials of the company, including the general manager's and treasurer's rooms, and offices for the stenographers, bookkeepers and superintendents. A nickel-finished electric dumb waiter is used to carry books and papers be-



Main Floor: Purchase Street Side.



Club Room on Third Floor.

tween the first and second floor office. On the third floor is the club room for the male employees of the company, furnished with pool and card tables and reading tables.

The directors' room, furnished in mahagony and with a handsome marble fire place is on the third floor with windows looking out on Spring street.

On this floor is also the assembly room in which the foremen meet once a month to discuss the company's problems. This hall will also be used for demonstrations of gas cooking, etc. A complete gas kitchen for the use of the employees is just south of this room.

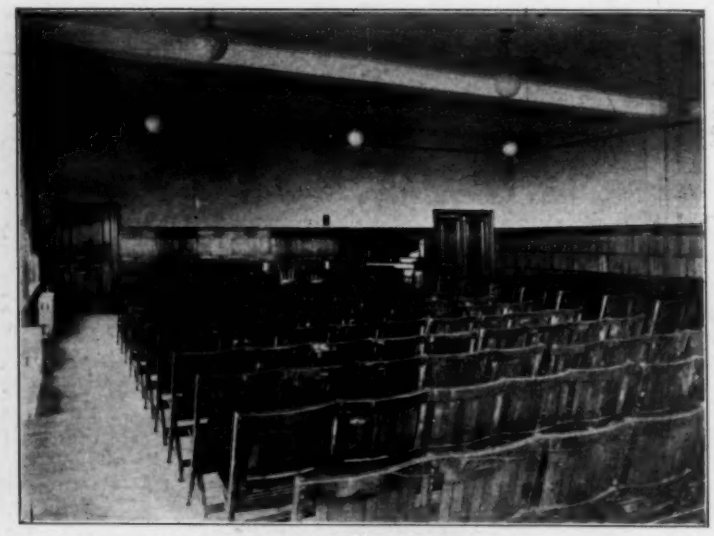
A small room for the use of the State gas inspector is between this hall and the Directors' room, and here the State official will inspect the gas for candle power and other qualities.

The fourth floor is used for a stock room and for storage, and everything taken from this floor is given out only on orders. The clock seen on Purchase street front, is regulated from this floor, where the electric apparatus which runs it is located.

The garage, wtih accommodations for 30 electric cars, fronts on Purchase street, with one side on School street. It has every modern garage appurtanance, with charging apparatus and compressed air outlets between each pair of cars.

Over the garage are the pipe shops, the stock rooms and the rooms for inspection and repairing of gas and electric meters. The building is furnished throughout in a simple but very attractive manner. On the second floor the woodwork is of oak, while on the third the trim is cypress. The rooms of the General Manager and the Directors are finished in mahogany. The ceilings are all high and the lighting both-by day and at night is very good.

Fixture Display: Second Floor.



Employees Assembly Room.

The By-Product Coke Ovens at Chattanooga, Tenn.

The Chattanooga Gas Company is making elaborate preparations to push the sale of gas for industrial purposes, incident to their contract with the Chattanooga Gas & Coal Products Company, to buy 200,000 cubic feet of gas daily. The latter concern is erecting a 12-oven plant, each oven of 16 tons capacity, of the Roberts type, which it is anticipated, will be in operation next spring. When completed, the investment will be between $450,000 and $500,000, and the plant will produce furnace, foundry and domestic coke, tar and sulphate of ammonia. The gas, sold at rates fairly competitive with natural gas, will, it is expected, attract manufacturers of pottery and glass, the former not now represented in the Chattanooga district at all. The company is a subsidiary of the Durham Coal and Coke Co., of that city, and will coke coal mined by that company. It will be necessary to lay some 4 miles of mains to pipe the gas to the distributing system of the Chattanooga Gas Company. The first order for pipe aggregating 22,000 feet. The distributing company plans an extensive campaign for inducing manufacturers to adopt gas instead of coal, and is remodelling its exhibit rooms in order to install an exhibit of gas appliances for demonstrating the various uses to which gas can be put.

This should help the industrial growth of Chattanooga, which is already an important manufacturing center with nearly 300 factories and greater diversity of products (1,137 articles) than any other southern city. The Chattanooga district is one of the principal soft coal producing sections of the country, 20,000 tons being mined daily.

The Western Gas Construction Company, Fort Wayne, Ind., is furnishing the equipment for indirect ammonia recovery, the Kerr-Murray Company, Chicago, has the contract for gas holder; Wallmann, Seaver, Morgan & Company, for coke pushing and coal levelling machinery: R. H. Beaumont & Company, Philadelphia, for coal and coke conveying, screening and grinding machinery; American Refractories Company, Chicago, silica brick.

ADDRESS OF MR. THOMAS N. McCARTER AT THE MINNEAPOLIS CONVENTION, N. C. G A.

By the printed program it was alloted to me to reply to an address by Mr. James J. Hill, but I am informed he is unfortunately absent in the East. It would have been to me a very great honor to have responded, in ever so inadequate a way, to anything that that master builder of this great northwest should have said to you gentlemen. I have for him a veneration which I know is shared by this entire locality. Surely it cannot be said of him that a prophet is not without honor save in his own country. I know I voice the feeling of all of you when I express disappointment that he could not be here with us. But our disappointment has been tempered by listening to the words of sound advice and wisdom we have had from Mr. Decker. His Honor the Mayor referred to the recent conference of Mayors in Philadelphia. That was a very interesting gathering and, as I am informed, took the form of very great criticism of public service corporations generally. Incidently it is rather amusing that the Mayors put one over on us, as the various public service companies helped to pay the expenses of having the Mayors abuse them. The Mayor says that at that gathering there was much criticism of the accounting methods of public service corporations, and that it seemed to be the feeling that the corporations should keep their books in such a way that even Mayors and Aldermen could occasionally understand them. I agree with him as to that, and I will say for his information that whatever may have been the fact in the past, latterly the charge is not true. The accounting of public service corporations, whether they be gas, electric or railway corporations, is being standardized, and now he who runs may read, and these corporations are not afraid to show the exact truth, including proper depreciation charges. If I may say so to the Mayor, I never saw municipal bookkeeping that anybody could understand anywhere. Let him show me one municipally owned undertaking in this country that keeps its books in standardized form. I have never seen one that did not attempt to conceal the truth. One of the very first things that public service commissions should be given power to do is to force municipal undertakings to keep their books the way we are required to keep ours. Then we will know the truth about them.

We belong to a curious business; for some reason everyone's hand is against us. We seem to be regarded as though we all had the leprosy; as though we should be compelled to segregate ourselves and live apart, so honest men should not be defiled by our touch. Whether this is due to the growing socialistic tendency which is sweeping the country, or to the great mistakes made by public service corporations more than a generation ago in their exploitations of these properties upon the public, whether it be due to both of these causes or to others, or to all of them together I cannot say. But the fact is we stand where everyone's hand seems to be against us. Not only the public utility corporations in which we are more directly interested, but all quasi-public corporations, including the steam railroads as well. I saw an interesting statement the other day made by one of the executives of the Pennsylvania Railroad, to the effect that that corporation now had $500,000,000 of outstanding share capital which had cost the stockholders $540,000,000, so that the stock of that corporation not only has not been watered, but it has cost its holders about $108 a share. The same statement showed that the return paid upon that stock during the whole history of the road was 6.1% on par, or something considerable less than 6% on the premium price at which the stock was sold. Some 4 years ago Mr. P. F. Sullivan, the President of the Bay State Railway of Massachusetts, stated before a railway convention that there were 80 electric railways in Massachusetts, one-half of which were paying no dividends whatever. And mind you Massachusetts has been a commissioned governed state for upward of a quarter of a century: and throughout the entire history of electric railroading, and there is not a dollar of water in any of these railroad companies, and yet of 80 companies doing business in that State, one half of them paid no dividends on the capital actually invested, and those paying dividends pay only about 6% on their share capital.

Mr. Decker said that the war and other things will cause a great extension of business in this country. The Mayor said the farmer and the manufacturer are constantly demanding better facilities of every kind; and Mr. Decker further remarked that one result of the war would undoubtedly be that interest rates will be high. If you want these better facilities for the farmer and for the manufacturer, if they want them, and interest rates are higher, how will you get these facilities unless you give a commensurate return? The situation might just as well be looked in the face; the American people have got to realize that the day is passed when enmity and opposition should be the attitude toward corporations, and that efforts to strangle them must cease. They must be given a chance to live. Hold them to strict accountability for service and give them a chance to earn a fair and commensurate return on the investment, which must be sufficiently large to attract capital for the purpose of developing these facilities. I have not the time in this busy program we have, to discuss these subjects with the attention to detail they deserve, but there is one point that I want to impress upon this meeting, and that is: The first way for the public to recognize the necessity of which I speak is in the treatment of franchises. I am not speaking selfishly. I come from the benighted region where our franchises are perpetual, and I thank God for it, but I know that through the greater part of the country there is a public sentiment in favor of short term franchises. I do not wonder that as the result of exploitation public sentiment was aroused until it crystalized in this way, but in the meantime there has grown up a policy of regulation, let us hope of wise regulation, that has come to stay. And my idea is that, given wise regulation, given regulation to compel adequate and proper service, given regulation of rates wisely administered, than the question of the length of the franchise loses its importance to the public. In fact unless surrounded with the proper conditions it becomes a menace to the public. Let us say for example that where faanchises expire it will be enough to give them 20 or 30-year franchises. What is the result? Suppose that a piece of land on one of the prominent streets of the city is for rent, and I take a lease on it for 20 or 30 years, and put up a modern office building; suppose I am going to put considerable money into the building, and that for a period of 20 years I have the right to have that building on the lot. If I am a prudent man, before I take any profit from the operation of the property, I will charge off the taxes, insurance, operating expenses and all that sort of thing, and as I have 20 years of lease, in addition to all the expenses I have enumerated, I have got to charge off every year against the profit of the enterprise one-twentieth of what the building cost, and I must see to it that the rents I get from that property are large enough to enable me to do it. Otherwise I fool myself, and at the end of the period I will have had my profits as the years went on, but my capital investment is gone. This is exactly analogous to a franchise in the public street. If you take a 20-year franchise and build tracks and make the improvements in the streets and run cars over the surface of them and operate electric wires in the streets and have terminal stations and all the rest, if you have a short lease of life for the property you must charge off the cost year by year as the time goes on, or else at expiration of the franchise your capital will be lost. It is simply an arithmetical proposition, and it hurts the people because the rates must be made sufficient to pay the operating expenses, taxes, insurance and the quota of the capital that is being wiped out, beside a fair return on the capital investment. It will be better for the company and better for the public that the franchise be perpetual rather than a short franchise of this kind, although it should be subject to thorough fair regulation of the kind of which I have spoken. If not perpetual the franchise should be for such a long period of time as not to impose the burden of excessive rates on the present generation in order to pay for the capital expended. Some will say, "It is perfectly safe to take a franchise for 20, 25 or 30 years, as it will be renewed it is a safe business risk." It has not been a pleasant and safe risk in the city of Cleveland, where the railroad franchise expired, and they forced them to get out of the street or take a new short franchise and three cent fares; nor at Detroit, where the franchise has expired and they cannot agree on the question, and are just drifting along, and the newspapers print at the head of their columns, "No Franchise Hereafter to any Public Service Corporation." It is not very nice in the city of Toledo, where they are going through the same proposition, and it was not very nice in Chicago some years ago, until they reached a settlement that worked out very satisfactorily, but involved a great loss of capital to the people who had their money in the property. So I say, the thing to do, as long as you have carefully guided reg-

ulation, is to make it easy for these corporations to raise money, and not impose prohibitive terms. All this is very dry, and it can't be made anything else; but our whole industry is in a critical condition in this country due to these very causes of which I have been speaking. Some may say, it is no use to give long franchises, because you will capitalize them against the public, and if the day of municipal ownership ever comes the city will have to buy them back at an enormous price. But I say no, they cannot be capitalized in any way that will be improper. The Commissions will attend to that. You could never take away from the State the right to condemn for the benefit of the municipalities, and they will only have to pay a fair price if the country ever becomes foolish enough to go into the municipal ownership business.

EFFECTS OF GAS LIGHT UPON COLORED FABRICS.

The British Commercial Gas Association has recently completed some experiments upon the effect of gas lighting upon dyed fabrics, undertaken to determine the truth of statements made as to the fading of colors so lighted.

The procedure is thus described:

I.—A set of colored silk and cloth fabrics was exposed so as to receive all the effects of gas lighting from temperature, illumination and products of combustion; the specimens suspended on wires in a small compartment, the ventilation of which was restricted. The illumination on the specimens varied from twenty to forty foot candles, the temperature from 75 to 80° F., and the carbon dioxide from nine to eighteen parts per 10,000. All these were considerably above normal conditions, but no appreciable depreciation of color was found.

II.—A second set of samples exactly the same as those used in the first experiment were exposed to the temperature and products of combustion effects. They were suspended in a opaqus vertical tube, so that while free access to the specimens was had by the vitiated air, no light could enter. This experiment, like the first, yielded almost negative results; that is, no appreciable fading was observed.

III.—Similar specimens were exposed so as to receive illumination and temperature, but not in contact with the products of combustion. This was done by suspending them in a sealed jar of fresh air, the jar placed in the compartment where experiments (1) and (2) were being made. This also yielded negative results.

IV.—The samples, exactly as above, were exposed so as to receive the effects of temperature only, by suspending them in a sealed jar covered with a brown paper jacket. Any effects produced in this case would, therefore, be due to temperature only. Almost negetive results were obtained.

This plan must indicate the extent and nature of all effects of gas lighting. While objection might be urged against enclosing the materials in glass jars to prevent access af air, because the light in passing through the glass would suffer absorption of any ultraviolet rays it might contain, it must be remembered that glassware is always used with incandescent mantle burners, so that the light necessarily passes through a glass envelope, and the use of the glass jars to enclose the samples in no way affects the results and the conclusions to be drawn from them.

V.—Another exactly identical set of samples were enclosed in a sealed jar and exposed to daylight.

A sixth set was carefully preserved in a sealed envelope, away from heated air and products of combustion, to serve as a standard of reference for ascertaining the extent of the deterioration in color of the exposed specimens. The period of exposure was 90 days, at the end of which time the 5 sets of materials were compared with the preserved specimens. In the case of the specimens exposed to gas light, the exposure was continuous 24 hours a day; but with those exposed to daylight the degree of illumination and the temperature necessarily varied during the day and night.

The report says: "In most cases there was no visible deterioration of the color of the specimens exposed to gas lighting, and in view of the various ways in which they were exposed, it seems safe to conclude that the effects arising from gas lighting are of no practical moment."

It was found that in almost every case the colors underwent no visible change, and where changes could be detected by careful inspection they were very slight. The instances in which changes could be observed are enumerated:

Experiment No. 1.—The specimens exposed to all the effects of gas lighting—temperature, products, and illumination; the following slight changes were observed:

(*a*) The bronze-green had lost a little of its glossy surface, but its color was intact.
(*b*) The dark red became slightly brighter.

No other changes could be detected.

Experiment No. 2.—These specimens exposed to temperature and products effects only; the following were observed:

(*a*) The bronze-green silk lost a little of its glossy surface, but its color was unaltered.
(*b*) The dark red was slightly brighter as the results of exposure.

In every other case no change in color or general appearance could be seen.

Experiment No. 3.—The specimens exposed so as to receive only the temperature and illumination effects; the following changes were observed:

(*a*) The brown-green had lost some of its glossy surface.
(*b*) The dark red became slightly brighter.
(*c*) The light red had faded very slightly.

In every other case no change in color or general appearance could be noticed.

Experiment No. 4.—These specimens were arranged so as to receive the temperature effects only. In no case could a change of color be detected. A careful comparison of the exposed specimens with those preserved for reference showed that the color of the materials were intact.

These experiments, especially when their abnormally severe conditions are taken into account, show very clearly that the deteriorating effect arising from the use of gas lighting is of no practical importance compared with the effect of daylight.

The following summary indicates the changes due to daylight that were observed in silk materials:

Brown-Green.—The color had distinctly faded.
Bronze-Green.—The green component seemed to have entirely disappeared, leaving the material a bronze color.
Dark Red.—Was distinctly paler, as though the material had been partially bleached.
Red-Brown.—The brown component had partially disappeared, leaving the material a brighter red than originally.
Bright Red.—A distinct fading had taken place.
Light Blue.—Practically entirely bleached.
Blue.—The color had darkened appreciably.
Olive Green.—Only slightly faded.
Dark Olive Green.—Less bronzed than originally.
Light Olive Green.—Distinctly paler, as though bleached.
Dark Purple Brown.—Very much bleached.
Purple.—Faded to a brownish tinge.
Dark Khaki.—Turned brown.
Drab.—Changed to a distinct pink.

It is clear that daylight is a powerful factor in the fading of colored fabrics, as in no case was the color of the material unchanged, and in some cases it was practically destroyed.

I am, therefore, constrained to report that, in my opinion, any deterioration of colored fabrics that might have been observed in warehouses is probably due to the effects of daylight. It is unlikely that daylight would have been entirely excluded, and seeing that the effect of daylight is so serious, even a small amount of daylight illumination would produce effects much more serious than incandescent gas illumination.

REPORT OF N. C. G. A. COMMITTEE ON OUTDOOR GAS LIGHTING.[1]

ALONZO P. EWING, Chairman.

What *has been done* in Outdoor Gas Lighting;
What *is being done* in Outdoor Gas Lighting:
What *should be done* in Outdoor Gas Lighting.

What Has Been Done.—During the past 10 years gas journals have published pictures and articles from gas companies from coast to coast, showing installations designed to light the goods in the window, to attract the public to the store, and "White Ways," installed to better the conditions of streets.

Little progress has been made in this country in increasing the revenue to gas companies through systematic efforts to obtain outside lighting. Not enough effort has been given to city street lighting, and the plans adopted has not been such as to keep the equipment modern. A study of what has been done during the past 10 years will materially assist in avoiding a repetition of errors.

Since 1903 the American Gas Institute has published approximately 150 abstracts on street lighting, containing information from all over the world. The National Commercial Gas Association, in its 1914 course, makes an exhaustive report on the history, requirements and utilization of gas street lighting. This information is well worthy of some one making an exhaustive study of it and recommending to the gas fraternity ways and means based on the experience of the past.

What is Being Done.—A analysis of the correspondence from the largest manufacturers of outside gas arc lamps in this country, and from gas companies located from the Atlantic to the Pacific and from the Gulf of Mexico to northern Canada, fails to show any great activities by gas companies in outdoor gas lighting. Here and there a few hundred outside gas arc lamps have been put out on some special plan or campaign, and evidence is ample of what might be done if you, as commercial men, would but realize your opportunities. The smaller gas companies over the country seem to be more active and to be getting much better results than the large companies.

From the evidence gathered it is impossible for us to determine what plan is most successful. The rental plan seems to be the one most in use, but whether it really shows any profit to the gas company or not is a matter for discussion. We would suggest that you figure carefully all the expenses of advertising, installing, maintaining and the gas revenue, before adopting too low a rental.

In New York city, for the first time, as far as we know, they are making a campaign along definite lines to increase the income from advertising display gas lighting.

Atlantic City is installing 300 lamps to light the "Board Walk."

The Public Service Gas Company has made some noteworthy installations on a rental plan.

The United Gas Improvement Company, during the past year, has had special men out over the country making installations on rental.

Manchester, N. H., has put in nearly 400 lamps. Think of this number in comparison with your own city!

Omaha, Neb., put in 500 lamps in 30 days.

California has furnished some very spectacular outdoor lighting campaigns.

Washington, D. C., has more than a thousand outside gas arc lamps on rental basis.

During 1913, St. Louis put out more than a thousand outside gas arc lamps.

Chicago, Ills., and Milwaukee, Wis., have, for a good many years had large numbers of outside gas arc lamps, and continue to maintain them with a good deal of credit to the gas fraternity.

The Brooklyn Union Gas Company during the past year has shown some activity in outside gas lighting.

What Should Be Done.—Before considering what should be done, there are some matters for considerable thought, and in our discussion we will take up but one form of outdoor lighting—that of advertising lighting with the gas arc lamp.

First: { Revenue per lamp.
Burning hours per lamp.

Second: Plan: Rental.—Sale.—Lease.

A. Salesmen
- *a.* Salary.
- *b.* Commission.
- *c.* Salary and Commission.
- *d.* Bonus.

B. Installation
- *a.* Men. { Salary / or / Salary and Bonus.
- *b.* Method.
- *c.* Location { High. / Low.

C. Maintenance
- *a.* Men { Salary / or / Salary and Bonus.
- *b.* Method employed.
- *c.* How often.
- *d.* Cost.

D. Records
- *a.* Bookkeeping Method.
- *b.* Collection method.
- *c.* Profits.

Third: Type of lamp.

The first thing to be considered is what revenue you could obtain from the adoption of a campaign on outside gas arc lamps. How many lamps do you think could be installed? How long are they likely to burn? These estimates will give you a definite idea of the gross income from gas. If the investigation convinces you there is a revenue worth going after, the next consideration is the *Plan*. It is not our intention to discuss whether the plan should be rental, lease or sales, as any of them could well occupy a paper by itself. Fix strongly in your minds the value of carefully following the plan, because a poor plan well worked is better than a perfect plan poorly worked.

By "Rental Plan" we mean the installation and maintenance for a fixed charge per lamp per month. By "Sales Plan" we mean selling the lamp outright, either for cash or on small payments, the price to include the installation and in some cases the maintenance for a short period. By "Lease Plan" we install a lamp, maintain it and furnish the gas for a flat rate. In some instances a meter is installed as a check that the consumer does not use in excess of the number of hours named in the lease, and payments sometimes are weekly instead of monthly.

Whatever plan you may adopt, you have four definite disvisions of it.

Salesmen, Installation, Maintenance, Records.

That this paper may have some definite conclusion, we suggest the following combination sales-rental plan; sales, because the plan carry itself; rental, because of the ease with which collections may be made, and to facilitate the work of the salesmen.

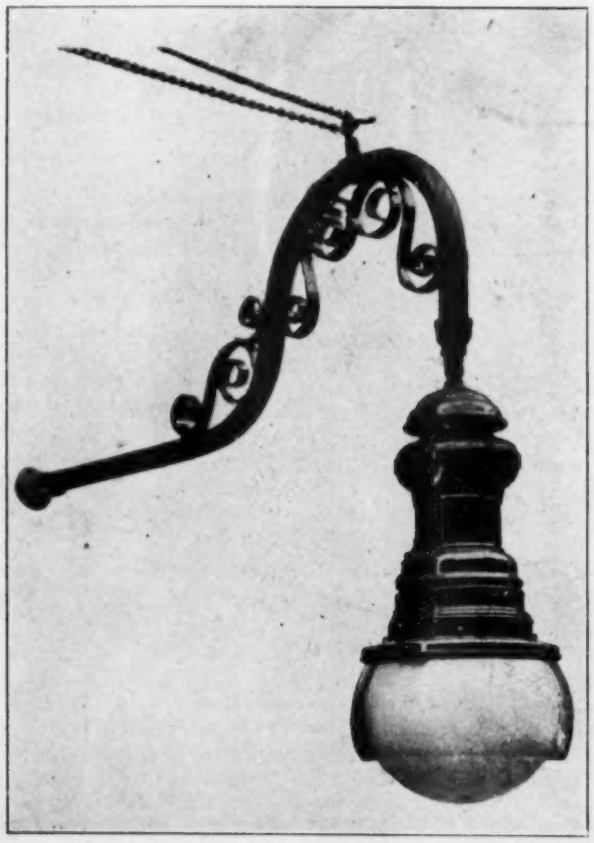
This plan uses a 5-mantle outside arc with an automatic shut-off, either mercury valve or other equally good method of control. It makes the installation so much more convenient that it will get sufficiently more use to warrant the small additional expense.

We recommend the lamp be hung high, to attract customers to the store; but *not* to light the goods to an extent that you will replace other window lighting. Use an ornamental bracket. The accompanying picture shows bracket method of hanging. We suggest that lamps in the thickly populated business districts be turned on and off by the gas company, assuring longer hours of burning.

Taking up the plan in detail, our first consideration is the salesman. He may be hired on a straight salary, commission, salary and commission, or on a bonus system. We suggest the last. Setting aside a maximum of $3.50 each for selling the lamp, paying $2.50 straight commission to the salesman for the first twenty lamps hung on his orders during a month, would show the salesman but $50.00 income; but that is all he is worth if twenty lamps a month is the best he can do. If thirty lamps are hung on his orders in one month, increase the commission to $2.75 per arc, which would give him a total income of $83.50. Add to this a bonus of $10.00 if he turns in not less than one order each day during the month; this is to insure continuous work. To a salesman who has forty lamps hung on his orders during one month pay $3.00 per arc, and

1. Slightly abridged from uncorrected proofs.

increase commissions to $3.25 if fifty lamps are hung, and to $3.50 if seventy-five are hung. With a $10.00 bonus for at least one order each day, and a sliding scale of commissions based on the number of arcs hung, you induce good salesmen to get better and to keep working, because the more orders they get the more they wan t.



You can afford to pay these commissions if you make the selling price of your lamp sufficiently high. Our experience is that the gas man is ordinarily afraid of his price. He always talks "low price." When you compare tbe five-mantle outside gas arc lamp with any other outdoor unit there is nothing better.

Installation.—Installation is divided under three headings:

(*a*) Men. (*b*) Method. (*c*) Location.

(*a*) We strongly advise a bonus system for the men hanging the lamps. Set an amount that you are willing to pay as an average, and divide with the men any savings they make from this figure. Your men will work faster, they will do better jobs, and you will be doing what, sooner or later, you will have to do anyhow, dividing your profits with them.

(*b*) The method should give a decorative appearance. The outside line should be sufficiently large to provide for accumulation of frost in the pipe. All tees and outside piping should point up, to avoid condensation running into the lamp; if the decorative bracket has an upward bend it will serve the same purpose. Chain supports make for decoration and get away from the stiff appearance of the straight iron bracket.

(*c*) Lamps should be hung high to give an attractive appearance to the building front. It costs more to maintain it when hung high, but you should provide for this in your selling plan.

Maintenance.—Maintenance is divided into four headings:

(*a*) Men. (*b*) Method. (*c*) How often. (*d*) Cost.

(*a*) Here again is an opportunity to divide profits with the men. There will be an opportunity for them to show a saving from the estimated cost, and you divide it with them.

(*b*) The method employed and the equipement is a study by itself. A good deal of money can be saved by studying the methods of your maintenance men to assure clean lamps, regularity of attention and prevention of breakage of globes by proper regulation. Take the man who gives you the most service for the least expenditure of energy, and take a moving picture of his entire operation. Use this picture to educate the men who do other maintenance work.

(*c*) An outside gas arc lamp should have attention once each week, near the same time of day and the same day of the week. If the customer gets in the habit of seeing you, he expects you and remembers that you have been there.

(*d*) Set a sufficiently high price to assure the proper kind of service. You may do it for less, but have some profit for your men that will make it worth their while, so that your bonuses will look good as well as your maintenance. Well-paid maintenance men will assist materially in keeping outside lighting business. Sometimes a disparaging remark from a maintenance man is the real reason that you lose the business.

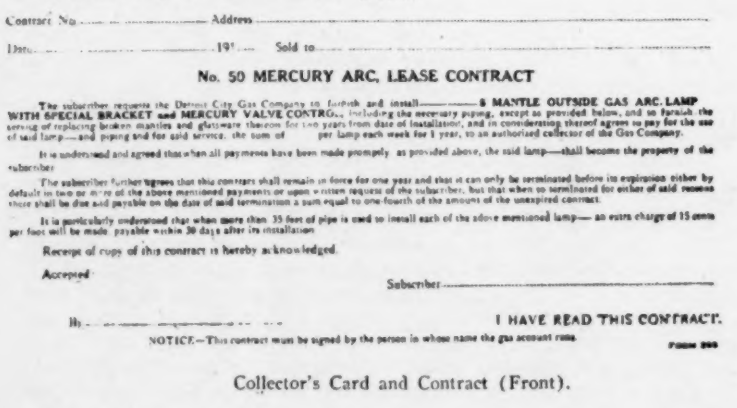
Records.—These are divided into:

(*a*) Bookkeeping method. (*b*) Collection method. (*c*) Profits.

Whatever else your plan may do, it is not a success unless you have profits.

(*a*) *Bookkeeping.*—It is convenient to make the original work order the ledger sheet. This keeps the records closer together and makes possible careful checking and accurate figuring of costs.

(*b*) *Collection.*—The card illustrated shows a method that allows the maintenance man to do the collecting weekly instead of by the month. You can collect almost as much and not have excessive cost, because your maintenance man must go anyway, and any complaints will be made to him, thus getting collections, complaints and maintenance by the same man.



Contract No. ..... Address .....

Date ..... 19¹ .... Sold to .....

No. 50 MERCURY ARC, LEASE CONTRACT

The subscriber requests the Detroit City Gas Company to furnish and install ——— 5 MANTLE OUTSIDE GAS ARC LAMP WITH SPECIAL BRACKET and MERCURY VALVE CONTRO... including the necessary piping, except as provided below, and in further consideration of replacing broken mantles and glassware thereon for two years from date of installation, and in consideration thereof agrees to pay for the use of said lamp ... and piping and for said service, the sum of ... per lamp each week for 1 year, to an authorized collector of the Gas Company.

It is understood and agreed that when all payments have been made promptly as provided above, the said lamp—shall become the property of the subscriber.

The subscriber further agrees that this contract shall remain in force for one year and that it can only be terminated before its expiration either by default in two or more of the above mentioned payments or upon written request of the subscriber, but that when so terminated for either of said reasons there shall be due and payable on the date of said termination a sum equal to one-fourth of the amounts of the unexpired contract.

It is particularly understood that when more than 35 feet of pipe is used to install each of the above mentioned lamp— an extra charge of 15 cents per foot will be made payable within 30 days after its installation.

Receipt of copy of this contract is hereby acknowledged.

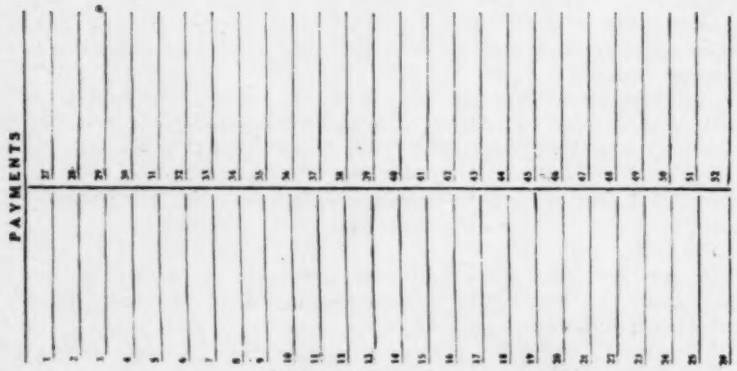
Accepted .....

Subscriber .....

By ..... I HAVE READ THIS CONTRACT.

NOTICE—This contract must be signed by the person in whose name the gas account runs.

Collector's Card and Contract (Front).



Collector's Card and Contract (Back).

(*c*) Profits is last on the list but should be the first consideration. Below we give a tabulation of how the profits may be made:

Lamp Cost	?
Selling Cost	?
Hanging Cost	?
Maintenance, 2 or 3 years	?
First Mantles	?
Stockroom and Freight	?
Collection and Bookkeeping	?
Overhead	?
Total	?

On the back of the card are 52 numbered lines, and collections made are stamped on the line representing that week. All collections made by the maintenance men during the 37th week would be stamped on line 37. If the consumer does not pay on the 38th week, when the maintenance man calls the 39th it will show that last week he did not pay. If he collects two weeks on the 39th he stamps on the 38th and 39th line the day that he made the collection, so that a careful analysis of the card at any time would show in what order payments had been made, and whether payments were up to date.

The above contract included two years' maintenance in the sales price, to assure the lamp being kept in good condition for at least two

years. If you prefer, you could make this three years. The usual life of an outdoor equipment of this kind is from 2 to 3 years.

We have purposely left payments until the last, because, if the plan appeals to you, the amount of the payments is secondary. Renting this outside lamp on the basis of (?) per week would give you a gross income in a year of (?), and it is evident where your profit comes from and what your profit will be. Isn't it worth while to make your price sufficiently high so that you see the profit? You can get men to do a day's work every day and give you the best there is in them, because you are dividing profits with them and giving them opportunity to make money.

All the figures have been left blank so those who are interested can use their own figures. The principles have been called to your attention in the hope that you will realize the opportunity to get considerable additional consumption from outdoor lighting. A 5-mantle outdoor gas arc lamp used until midnight consumes 50,000 feet of gas per year. There are no objections to outside gas arc lighting except mechanical ones, and if you will make your maintenance service what it should be, having in mind that you have a right to charge sufficient to get full cost out of it, there is no question that your customer will be pleased with the enormous steady, mellow light, (or white light, if you prefer) of the gas arc lamp.

The gas arc does not attract bugs in the summer time; if it is properly installed you should not be troubled by freeze-ups. The mercury valve makes the installation as convenient as other types of outdoor lighting.

One needs but look at the main street of any of our cities to realize the enormous amount of money expended by the merchants in drawing attention to their stores. We are not getting our share because we have not gone after it. We have not realized the value of the outdoor lamp to ourselves or to the consumer. We have underpaid the men who go after this work. We have thought too little about the plan, and when we adopt a plan we spend too little time making it work.

Multiply 50,000 feet per lamp per year by the number of lamps you would like to install, and then go after this big game.

FREE MAINTENANCE OF ALL GAS LAMPS BY THE GAS COMPANIES.

Written for the 45th Meeting, New England Association of Gas Engineers, by Mr. J. P. Conroy.

Perhaps it seems a bit presumptuous for a manufacturer to address a gathering of gas men on a subject so essentially their own, and to speak so plainly and so urgently about it. But at the outset, let me impress most forcibly upon you that this matter of lamp maintenance concerns the manufacturer quite as vitally as it does the manager of a gas plant. I believe the very life and future of gas lighting hangs upon the proper treatment of this problem, and that you gentlemen as well as we ourselves, can hope for no prosperity without a healthy lighting situation. Therefore, this message is important.

Most of you know that for years I have been an advocate of permanent maintenance of gas arcs by the gas company. I have advised you to rent gas arcs that you might control them and preserve them so that service shall not suffer. I have lived for years in contact with this problem, and have studied it in all parts of the country, and the more I see the more I am forced to recognize that the canker at the heart of gas lighting is lack of proper maintenance. The consumer cannot and will not care for his own gas lamps, and without care there can be no good service and no lasting satisfaction—no security.

What will you do? There seems to be but one solution proven adequate and practical—that the gas company take upon itself the permanent insurance of good light, and systematically maintain each lamp so that it will continue in efficient operation, giving honest value in illumination for gas consumed.

The Unsatisfactory Situation.—There is no point in my stopping here to go back and review the steps by which the interest of the manager has been diverted into other fields until the lighting business, through neglect, has reached stagnation. We all know that the early promise of the growing markets for domestic and industrial fuel was so alluring that the lighting business was almost forgotten and abandoned to our electric competition. But did the dream come true? It did not. For after 10 or more years of striving in every way to build up the sale of gas for domestic and industrial fuel, the best statistics show that still 50% of the artificial gas sold in this country is consumed for lighting purposes, while 35% goes for domestic fuel and only 15% for all industrial fuel and every other purpose. Truly, this dream of something better than the lighting business has not been realized! And it is not likely to be, judging from present indications, for the electric companies are energetically invading both the other markets. Electricity is becoming more and more adaptable to household service, and the number of electric appliances in use for cooking and for heating in the homes is rapidly increasing. Also, within the month there has been in session a convention of industrial electric heating experts, who are joining hands in their constructive efforts to develop and expand the already considerable use of electric current for annealing, baking and the like. Gas men who have consoled themselves with the thought that, if they were to lose the lighting business they could make up the difference by fuel consumption, should bear this in mind. If after all your efforts through these many years, beginning with a virgin field in the fuel business, you find to-day that 50% of your total output is sold for lighting, how long would it take you to fill up the gap if you should lose the lighting business? And remember, you would have to fight growing competition, step by step.

The Urgent Question.—And so the question follows—What are you to do to win more lighting business and to hold what you have since it has been proved impossible to get along without it or to find another market as good? The answer is—Take good care of the lighting business that you have, and stop the unnecessary discrimination against it that has now become almost universal.

That gas for lighting has held as great a share of business against a competing commodity that really has some very excellent advantages over it, is remarkable. That gas companies have been able to sell gas lamps to the consumer without any provision made for the proper inspection or maintenance of an appliance so delicate to adjust, is marvelous. That they have been able to sell consumers gas arc lamps at prices ranging from $8.00 to $20.00 each, charging extra for maintenance 25 cents to $1.00 per month; or rent such a lamp to the consumer for 50 cents to $1.50 per month including maintenance, is almost a miracle. For during all this time electric companies have offered free renewals of carbon lamps, and have introduced the Mazda lamp giving most appealing price consideration with it, and in many cases free renewals. And all the time, gas companies have offered inducements of one kind and another to attract and acquire fuel business from both domestic and industrial customers, *but have denied all similar inducements to the lighting cvstomer.* They have taken care of the fuel appliance, but they have refused to take care of the lamp.

The wonder is that you have any lighting business left, and what would you do without it?

Evidences of Discrimination.—Previous to undertaking to prepare this paper, I interviewed many gas men in various parts of the country with a view to learning just what they were doing in the way of maintenance of gas burners, and by several I was told that they had what seemed to them an ideal system of residence maintenance. I inquired particularly of those who have campaigned for residence lighting, selling single burners, and found that in most instances they were sold on a three-months-payment plan carrying maintenance for that period. But if there ever is a time in the life of a gas burner when it does not need maintenance, it is in these first three months; yet it was during this time that the companies maintained them, and then left them to the mercy of the consumers. It is not worth your time and effort, even if you sold the burner at a profit, to get but three or even six months consumption out of it. These burners should be kept in order and repair not three montes but three years, or as long as the burner will last.

One manager advised me with pride that he had 10,000 residence lamps under contract for maintenance at $1.20 per year. My estimate is that there are about 100,000 single burners in that city, and I wonder what is to become of the other 90,000. Another took pains to tell me that he had a return post card delivered with the gas bill, asking if the residence lights were satisfactory; if not—a report on the card would call a man to clean all burners and supply

(*Continued on page 122*)

THE AMERICAN GAS LIGHT JOURNAL

Entered at the Post Office, New York City, as Second-Class Matter.

Published weekly at 42 Pine Street, New York City.

Telephone Call, John, 2996. Cable, Am-Gas.

E. P. CALLENDER, President.
A. M. CALLENDER, Vice-President and Treasurer.
CHARLES H. WADELTON, Secretary and Manager.

SANFORD K. CAMPBELL, Editor.

NEW YORK, MONDAY, FEBRUARY 22, 1915.

American Coal Tar Dyes.

Hundreds of skilled men in the United States are just now devoting their energies to the production of coal tar colors, and there is every reason for believing that some commercial processes will be evolved by them. About the last (we need not say, "and not the least") to join the ranks of these investigators is Mr. Thomas A. Edison, who is reported to be building a benzol recovery plant of his own design at Johnstown, Pa., adjoining the by-product coke ovens of the Cambria Steel Company.

Municipal Ownership Not so Popular.

The following from an editorial in the Tacoma, Wash., *Ledger*, indicates that municipal ownership of public utilities appears to be losing ground both in Tacoma and Seattle. "Not long ago there was even a demand for municipal fuel yards, and every week or two a proposal to municipalize another industry was made. Opponents to these various schemes were roundly condemned as reactionaries in league with 'the interests.'

"It is different now. Those who were loud in their demands for municipal ownership two or three years ago are now taking a more conservative view, and are asking that proposed ventures be carefully investigated in order to learn whether they could be operated without loss to the city. They have begun to see that there are difficulties and that all is not smooth sailing for the private corporations furnishing public service.

"Regulation of some of the public service corporations became so restrictive that proposals of purchase by the public were not unwelcome, and it seems that when it became evident that many of these corporations were willing to sell to the public, municipal ownership sentiment began to decline.

"The Municipal League of Seattle, often a radical organization, has just voted against the purchase by that city of the Seattle, Renton and Southern Railway, one of the members who investigated it finding that if the city paid $900,000 for the road, it would then have to spend about $2,000,000 in improvements to put the line in good condition. He added, that if the city bought the line and began paving there would at once come into the field the competition of auto busses, 'for nowadays wherever there is a boulevard there is an auto bus.'

"Another fact that may have influenced the Municipal League is that the two street car lines the city now owns are being operated at a loss, as shown by an investigation conducted by the State Bureau of Accountancy. Seattle is tax-burdened and bond-burdened more than Tacoma, and citizens are calling a halt on theoretical ventures in public ownership.

"At a meeting of the Central Improvement League in Tacoma when the proposed telephone franchise was under discussion, the members were outspoken against municipal ownership of this utility. The league even refused to endorse the mayor's demand for a reduction in telephone rates. This does not mean, of course, that the league is opposed to a reduction in rates. It means that the league refused to go off half-cocked and that it will make further inquiry. As one of the speakers said: 'What do we know about the equity of telephone rates? We don't know anything about the telephone business. Before we endorse the mayor in his stand, let's look into this matter a little.' What the people desire is a franchise fair to the public and fair to the company at the same time."

This certainly shows sane awakened public judgment, remarkable only because of its infrequency.

Illuminating Engineering Society Meetings.

At a meeting of the Council of the Illuminating Engineering Society, held February 11, the Committee on Time and Place recommended that the 1915 convention of the Society be held in Washington, D. C., during the third or fourth week of September. Plans are under way to arrange for the convention in accordance with the committee's recommendation.

Twenty-four applicants were elected members of the Society; and two, the New Haven Gas Light Company and the George Cutter Company of South Bend, Ind., were elected sustaining members.

Progress reports were received from the Popular Lectures and Sustaining Membership Committees and from the vice-presidents of sections of the Society.

Those in attendance were: A. S. McAllister, president; E. M. Alger, C. O. Bond, H. Calvert, P. W. Cobb, Ward Harrison, C. A. Littlefield, general secretary; L. B. Marks, treasurer; Preston S. Millar, Alton S. Miller, W. Cullen Morris, J. Arnold Norcross, G. H. Stickney and V. R. Lansingh upon invitation.

The New York section of the Illuminating Engineering Society held its regular monthly meeting on Thursday evening, February 11th, in the Engineering Societies Building, 29 W. 39th street, New York City.

The informal a la carte dinner at Keen's Chop House, which has become an established feature of the meetings, was attended by a good representation of the members and friends.

Chairman Norman Macbeth presided at the meeting.

The paper for the evening was "The Arc—Its Status as a Street Illuminant," by C. A. B. Halverson, Jr.

The scope of the paper was limited to three types of electric arc lamps, the Enclosed Arc, the Titanium Arc and the Magnetite Arc.

Mr. Halverson opened his remark by referring briefly to the type "C" incandescent series street lamp and the accessories necessary to bring its useful flux of light below the horizontal and down on the street surface where it is needed. The casing applied gives the lamp the appearance of an arc.

The enclosed arc and the Titanium arc were only briefly mentioned, reference being made to the mechanism, electrodes and the comparative efficiency of the lamps compared with the new Magnetite arc, which latter was fully described. This lamp shows some minor changes in construction, the main feature of the arc being the electrode used, and the refraction of the light accomplished by the use of one or two cylindrical prismatic glass reflectors which surround the arc flame, the lower end of the cylinders being a little below the level of the arc flame. By this method the rays of light which would be above the horizontal are redirected downward and a wider and more useful distribution curve is obtained. The light may be still further diffused by using an acid etched cylinder.

The paper was illustrated with lantern slides, showing the mechanism of the lamps, and charts of the performance of the various lamps in comparison.

An exhibit of the lamps discussed, with the various excessories, was erected in the hall and the various lamps demonstrated.

A lively and interesting discussion followed the paper. The meeting was well attended and a great deal of interest manifested.

[Special Telegraphic Report.]

FORTY-FIFTH ANNUAL MEETING, NEW ENGLAND ASSOCIATION OF GAS ENGINEERS.

YOUNG'S HOTEL, BOSTON, MASS., February 18, 1915.

A nice frosty morning, something of a contrast with yesterday in New York. Young's Hotel crowded with gas men, members and visitors. At ten A.M. the old room on the second floor was well filled when President Learned called the Forty-fifth Annual Meeting to order, with Vice-President Morrison on his right and Secretary Gifford and usual stenographer on his left. Reading of minutes omitted. Report of directors read by Secretary included names of 36 for membership, and all were elected. Committee on Nominations, Messrs. Hintze, Barnum and Snow to report this afternoon. President Learned read his address, which he prefaced by saying that the chief officer should serve but one term. Address was historical in order that there might be a complete published record of the association's past. Fifty-four years ago to-day a notice was signed by four Massachusetts companies calling for a conference of gas men to consult on the regulation of meters and companies. Ten years later, following the death of Mayor Blake, of Worcester, in purifying house explosion, the first meeting of the New England Association of Gas Engineers was held. A brief reference to each succeeding year, naming officers, etc., mentioned also that in 1872 Col. Armington presented a report on sizes for pipes in house piping.

First formal paper was by L. P. Gerald on the use of a new patent condenser not using water.

Statistics of companies was first asked for in 1873, and same year saw the first national body, later the American Gas Light Association.

1875 Capt. William Henry White attended meeting by invitation.

First banquet in 1875. AMERICAN GAS LIGHT JOURNAL made the official organ 1877.

1878 Major Geo. Warren Dresser, Editor, AMERICAN GAS LIGHT JOURNAL, supplied stenographer and took proceedings.

Water gas first mentioned in meeting 1870.

First meeting in Parker House, E. C. Jones joined, 1881.

First paper on gas stoves 1882, naming five manufacturers of ranges.

President Learned joined in 1883, and they had the first paper on candle power.

1899 N. W. Gifford became secretary; C. H. Nettleton, who joined in 1874, is oldest member still in harness. Total membership 269.

The following were appointed to prepare resolutions on the death of Mr. C. D. Lamson: Messrs. Nettleton, Wood and Fowler; and on the death of D. D. Russell: Messrs. McKay, Spear and Barnes.

The President spoke of the death of Hon. F. E. Barker, Chairman Massachusetts Gas and Electric Light Commission, then read his address which occupied 50 minutes and held the attention of all.

The Committee on Address, named by Vice-President Morrison, was Messrs. Africa, McKay and Fowler, all past Presidents.

Then came the report of the Secretary and Treasurer read by N. W. Gifford, followed by report of Auditing Committee by Dr. J. F. Wing; reading of correspondence; telegram from Carrol Miller, now General Manager Western United Gas and Electric Company, Aurora, Ills.; letter from E. C. Jones, President American Gas Institute and the Pacific Coast Gas Association; and from the new Chairman of the Massachusetts Gas and Electric Light Commission, all read by Secretary Gifford.

Mr. Spear reported resolutions on the death of D. D. Russell.

The first paper read "Concrete Piles for Holder Foundations" was by F. E. Drake, of Lynn, Mass. This paper was well discussed by Messrs. Cheney, Norcross, Ellis, Kennedy and White, and their criticisms were mostly of the style of foundation pile. Messrs. Hewitt. of Toronto, Nute and President Learned also spoke. The next paper was that by W. O. Brewer, of Meriden on "B. T. U. Losses on Medium Pressure Lines," and was well received. Discussed by Messrs Beardsley, Shattuck, Hinman, Norcross, Klumpp and Hewitt. President Learned spoke of the great assistance given by Secretary J. B. Klumpp, Public Relations Committee, American Gas Institute, before State Commissions and of its great value. C. W. Hinman, always level headed, made a hit by saying that Commissions should regulate service and price but leave quality to manufacturer and user, and that no candle power or B. T. U. standards were necessary. This is in line with editorial in issue of January 25, 1915, AMERICAN GAS LIGHT JOURNAL on "Standards of Quality."

The attendance at the New England meetings is always good, and it is to be regretted that a larger and better lighted room is not arranged for.

At the afternoon session, Mr. C. H. Nettleton reported resolutions on the death of Mr. C. D. Lamson, and Mr. A. M. Barnes, in a few appropriate words, moved its acceptance and a copy be sent to Mr. Lamson's family.

"Industrial Fuel Gas," by Mr. W. H. Bradley, of Springfield, Mass., was next read and discussed by Messrs. Slade, Ware, Norcross, Crafts, Clinton, Blanchard, Ramsdell, Hewitt, Morrison, Jennings and Aaron.

At this point Mr. T. H. Hintze reported for the Nominating Committee as follows: For President, H. K. Morrison, of Lynn; Vice-Presidents, H. C. Crafts, of Pittsfield, and Dr. J. F. Wing, of Everett; Secretary-Treasurer, N. W. Gifford, of East Boston; Directors, Messrs. Norcross, Barnes, Tenny, Norton and Bird. On motion, Secretary Gifford cast a vote electing them all. The new President, H. K. Morrison was called upon and responded briefly bespeaking his thanks for the honor conferred.

Mr. H. N. Tolles followed with an address on "Fundamentals of Success in Business," which was keenly enjoyed. Adjournment was now had.

At the banquet, held in the large dining room, 140 sat down to the best dinner ever, thoroughly enjoying both food and speeches. President Learned proved himself a splendid Toastmaster, graceful and pleasing in all he said and did, recalling to many of the "Old Guard" who were present many incidents of times past. Mr. Nettleton spoke for the "Old Guard" of old time gas men of New England and asked for continued fidelity to duty. A toast was drunk to the "Old Guard." The new President, H. K. Morrison, asked for co-operation between company employees and association members. Mr. Arthur Hewitt, of Toronto, of whom I could say a good deal that would be complimentary, but must not for fear of violating President Wilson's request for neutrality, spoke on the subject of "Service," saying we must not talk it only, but deliver it, as the great object in life is to do something worth while.

A silent toast was drunk to those members who have passed on.

Secretary G. G. Ramsdell, of the American Gas Institute, spoke on the International Gas Congress and the prominence given gas at the Exposition. Mr. H. N. Tolles was the last speaker, whose topic was "Building for Success"—training men in business, not for business. Mr. Tolles is a forceful speaker who handles his topics in a very interesting manner, and holds the attention and interest of his hearers to the last. Many present remembered his address last December in Minneapolis at the National Commercial Gas Association Convention.

To-morrow's session will take up the paper on "New Vertical Settings at Fall River," by C. W. Hunter, of Boston, and a paper by Mr. J. P. Conroy, of New York, on "Free Maintenance of all Gas Lamps by Gas Companies." Mr. Conroy's paper is an excellent one and appears elsewhere in this present issue and should be read by all interested. The "Question Box" contains many queries and as many as possible will be taken up before adjournment, which is scheduled for 1:30. This will close the meeting, one of the best in its long and honored history.—S. K. C.

[OFFICIAL NOTICE.]

The Empire State Gas and Electric Association.

OFFICE OF THE SECRETARY,
NEW YORK, N. Y., Feb. 15th, 1915.

To the Members of the Empire State Gas and Electric Association: The second of the mid-year meetings of the Association will be held in the Hotel Utica, Utica, N. Y., on Friday, February 26th, starting at 10 A.M.

The principal subject for consideration will be "Gas and Electric Distribution Maps and Records," a matter in which everyone is interested and which is of great importance.

The Executive Committee will also have some other matters to present to the members for their consideration.

Questions are coming up every day in regard to the preparation of schedules of rates in accordance with the order of the Commission, and this meeting will afford a good opportunity to compare notes as to the progress being made in this matter and to discuss some of its more complicated phases.

Please reserve the date, Friday morning February 26th, and plan to be well represented. Very truly yours,

C. H. B. CHAPIN, Secretary.

(*Continued from page 119.*)

Free Maintenance of all Gas Lamps by the Gas Companies.

new mantles and chimneys at cost, no charge being made for the man's services. But how is the consumer to judge if his burners are giving satisfactory results? In our experience the consumer can only say if the mantles and chimneys are intact. But, as you know, they may appear all right, while the burners are not giving more than 50% of the rated candle-power. It is not enough for you to maintain burners for a short time. It is not enough for you to *offer* to care for them permanently. *You must actually do it.*

In some cases the gas company's representative goes around offering to clean all burners and furnish mantles and chimneys at cost, no charge being made for his services. In two cases in one city, I interviewed the lady of the house where the representative had been refused admittance on the grounds that the burners were O.K. I learned that the burners were not O.K. and asked one woman why she did not let him fix them, and I give you her exact words. She said, "Because I feared he would soak me for the repairs." If it had been the electric man that called offering to renew lamps free of charge, he would have been admitted with pleasure, as she would understand that there could be no cost to her. Just so the policy of the gas company should be clear cut and understood. After all, what possible objection can any manager have to proper maintenance, except the consideration of cost? But it is no less proper or profitable an expense than any other form of service or advertising. It is no less important to hold an old consumer than to win a new one.

One of the largest and most progressive gas companies in the United States told me how they had a force of "Lady Demonstrators" going from house to house, educating the house-keeper how to use a gas range. This demonstrating was charged up as advertising, but they charged full cost on the maintenance of all gas lamps. That's discriminating against lighting.

Another company showed me their free inspection and maintenance system of all industrial fuel appliances, hotel ranges and automatic water heaters. The cost of such service is charged up as expense. Why free maintenance there, when they insist on charging full cost for maintenance on gas lamps? Each year thousands of dollars are charged to gratuitous work by every gas company for the inspection or repair on gas appliances, while the maintenance charge on your gas lamps covers every item of expense including extra complaints. That's discrimination against lighting.

I find it the rule with most companies that they will run fifty feet of new main to connect a consumer in the residence district, run a service free and connect a gas range free though is is sold at cost. This means that you make an investment of from $15.00 to $30.00 in new main, and of $5.00 to $10.00 for a service, supplying at the same time a 5-lt meter at a cost of $7.50. For a new customer in the suburbs they charge all this expense to Plant and Equipment, although in case of liquidation, out of the investment you could scarcely realize a dollar except for the meter. Why hesitate to invest the same amount in lamps to be installed on your old mains, with service and meter and house piping already installed, where the returns in gas sales would be much greater? Isn't that discriminating against lighting?

I find many gas companies hiring cheap men to solicit the sale of gas lamps, reserving their best men, or hiring special high priced men, to sell industrial fuel appliances, hotel ranges and the like, where there is usually a concession granted in the price of gas for quantities. They are hiring the best men to sell gas at a low price, while the cheaper men must market the lighting which is always sold at the highest price. That's discrimination against lighting.

Some combination companies, and even many independent gas companies, have been and are discriminating in favor of electric lighting. One "combination company" I have in mind furnishes free renewals of all carbon electric light lamps, and sells Mazda lamps for 16 cents each less than they cost the company. That is 16 cents given to the customer for the carbon lamp they would supply free, while at the same time and from the same office they charge 25 cents for a gas mantle that costs not more than $12.25 per hundred. That's discrimination against gas lighting, and independent gas companies who have been doing likewise cannot expect to compete with the free renewals given by electric companies.

Some few years ago one large gas company in Pennsylvania had in force a double rate system, charging $1.00 per 1000 for fuel and $1.20 for light. I was advised by the manager that they sold gas ranges at a loss of from $5.00 to $10.00 each, but at the same time insisted on selling arc lamps at a profit, charging full price for extra piping and full cost for maintenance, until a second electric light plant was built in that city, and then the gas company made the price of gas for lighting the same as for fuel.

Here was a case of extreme discrimination against gas lighting—and they suffered for it.

Protection Needed on all Sides.—At every step the customer must be protected and encouraged to the greater use of gas. Gas lamp and mantle manufacturers who advertise their wares with fancy names, claiming great superiority and telling dealers and gas companies to make 100% by selling them, make a mistake. We all may have meant well in doing this, and marking the retail prices on the box, but from the standpoint of the gas company, such practice is surely harmful. If we wish to encourage the use of gas for lighting we should make it as easy as possible to secure, and the terms as low as possible to the consumer; also, we should protect our consumers against inferior makes of burners and mantles. If there is any superior quality of burner or mantle, let us find it and adopt it as our standard. *Remember the consumer judges the quality of your gas by the quality of the appliance and the service it renders.*

The great variations in gas quality and pressure have done much to discourage gas lighting, and taxed the manufacturers of gas lamps to their utmost, trying to build burners that will give satsifaction under all conditions. The candle-power standard has also done much to increase our trouble with gas lamps, and it seems strange that we have not found a way to adopt the B. T. U. standard with lower candle-power, which would not only increase illumination, but decrease or almost do away with mantles carbonizing.

Gas engineers have spent years studying how to get the greatest yield from a pound of coal or a gallon of oil, at the lowest possible expense. That you have been very successful is evident by the decline in the price of gas in the past score of years, as against a gradual rise in the price of nearly all other commodities. But after all is not our efficiency one sided? When we know, in many cases, that the gas is being consumed at the burner only 50% efficient, is it not a waste of a valuable commodity that should be corrected by us? Should we not insist on efficiency engineering at the burners as well as in the carburetor?

In a personal canvas in various parts of the country I have made careful inquiries and observation as to the condition of the gas lamps in a large number of homes. My estimate is that the average burners are not giving more than 50% of their rated efficiency. If this is a fair scale for the whole country and a burner is developing only 30-candle power when it should develop 60-candle, this means that the consumer might as well pay $2 per 1,000 cubic feet for gas and get 100% efficiency, as to go on paying $1 for 50% efficiency. *For, after all, the customer is spending his money for light not for gas, and by every law of justice he is entitled to the light that he is paying for.*

In conversation with many gas men I have asked why they do not do as the electric companies have done, give free renewals of mantles and chimneys and charge it up against the cost of producing the service. They tell me that the State Commission will not allow them to do it. This is not the fact, however, as is proved by a close examination of the laws, which in most cases definitely state that the Commission shall have power to prescribe as to the efficiency of appliances and lamps furnished. They will permit it, because quantity output must always affect the rates, and the extra service in lamp maintenance is given proper consideration therefor. Not only will they permit it, but I tell you when the Commissions understand the great economic waste that is going on for want of proper care of lamps and the consequent loss it means to the consumers, they are more likely to compel the gas companies to maintain all burners and charge the expense against the service, just as you do the cost of coal or oil used to produce the gas. And this expense will be allowed before they will authorize any more rate cutting. They may even permit you to raise your rates to cover such expense.

The United States Government has taken steps to prevent the waste of our natural resources such as lumber, natural gas, oil, coal and water power. When gas is being consumed at the burner only 50% efficient, is not this, too, a waste of our natural resources? And is it not to our best interest and our duty to see that this waste is stopped?

Service—The Great Consideration.—It is service that counts the most now-a-days, not rates. This is an age of service and the quality of the service is always gauged by its dependability, or the amount of annoyance that comes with it. You expect the service with the goods, and the cost must be included in the rate.

You want your daily papers delivered at your door, and your groceries and your meat, and all your household necessities, but

you are not willing to pay extra for this service because you know it is included in the rate. The telephone company installs an instrument, and keeps it in repair and polishes and cleans it regularly and you pay for all this in the rate. The telegraph boy calls for your message and another delivers it to its destination, and you pay for the service in the rate. Uncle Sam delivers your mail to your home or office, and the service is bought in the stamps. Again, the railroad company responds to the demand for modern service, and if you are about to take an extended trip that will carry you over many different lines, they sell you a through ticket that saves you the annoyance of purchasing separate tickets for each system. Moreover, a porter will meet you at the beginning and end of your trip to handle your baggage, a taxi will be waiting, meals will be available en route and innumerable service features will afford you comfort all the way. You pay for it all in the rate; in fact, aside from what you eat, the only extra expense you are put to is the tip you hand the porter or the waiter, and more complaint is heard about this tip than all the rest. When you get to the hotel you are assigned a room at so much per day, wherein you are supplied with towels, soap and many little extras that you pay for, quite unnoticed, in the rate. And you measure the value of a service, not by its cost but by the comfort it affords you. You may go to a restaurant and get a dinner that costs but 30 cents and not enjoy it nor care to go again; and then next day go to a first-class place and pay $2 for a meal in which the original cost of the material used was more than the 30 cents you paid the day before—and still you might be well pleased with the food and service. People are willing to pay for superior service, but they are not disposed to be annoyed by the detail of purchasing that same service piecemeal.

Your company is called a Public Service Company and because of its name, if for nothing else, a high degree of service will ever be expected and exacted by the people. The old unwritten law among gas companies, that their responsibility ends at the meter must be repudiated in letter and in spirit. Rather say—"Our opportunity begins at the meter and ends only when every possible appliance is delivering 100% efficiency." And this attitude must be sustained continuously and forever.

Rate reduction cannot be a substitute for service, and cutting your price of gas is not the way to hold the business. An interesting illustration developed recently in the experience of the Consolidated Gas Company, of Pittsburgh, where the same company controls both the natural and the artificial gas supply, as well as the electric central station. A few years ago they found that they were losing all their artificial gas business, and as natural gas was sold at 30 cents per 1,000 against $1 for the artificial gas, it was clearly useless to undertake to compete in the fuel market. To cut the price of artificial gas to 80 cents or even 70 cents would not have brought the desired result, so they finally decided to maintain the price at $1 per 1,000 and offer free arc lamps and maintenance to consumers. The result was that they placed over 8,000 gas lamps (artificial) in 2 years' time, the company applying 20 cents out of each 1,000 feet of gas sold to pay for lamps and mantles, and those lamps are still in use.

In Jamestown, N. Y., they sell natural gas of about 1000 B.T.U. at 30 cents per 1000. There is scarcely a gas lamp to be seen on the business streets, and we are advised by a local fitter with whom we have tried to do business that they are not piping any more houses there for gas. Everything is going to electricity, for you understand that where natural gas is supplied the company refuses to handle lighting appliances of any kind or pay any attention to care or maintenance. Nevertheless, natural gas used in a mantle burner and properly maintained gives wonderful results. It is always noticeable in traveling through cities where they have natural gas that there is a great deal of electric lighting, although, ofttimes the electric rate is as high as elsewhere. It shows conclusively that the people are not influenced by the cheapness of the commodity as much as by the quality of the service. And the service in a gas lamp depends on maintenance and probably always will.

Proof in Two Places.—The most conspicuous proof of what the benefit would be if gas companies controlled the lamps upon their mains is seen by looking at present day conditions in the electric lighting industries here and in England. In this country the electric companies have secured control of almost the entire output of electric lamps, and they have been brought to a standard, so that the quality or name of any incandescent electric lamp is scarcely ever questioned or considered. You do not find inferior electric lamps for sale in the department stores or "5 and 10 cent" stores, nor see peddlers going from house to house selling electric lamps. The electric companies have established a testing laboratory to which all manufacturers of electric lamps supply, for test, one lamp from each 1,000 made, and this lamp must prove up to a certain standard, and the lot is sold on the merits of such tests.

In Great Britain, on the other hand, an ill-considered law interferes, and we find the situation practically reversed. The electric companies have been forbidden control of the quality or use of lamps, while the gas companies are permitted to furnish and maintain all lamps, which they have done for years with the result that electric light is far less popular in England than gas light. Practically all electric lamps are sold there by hardware dealers and run as high as 8, 9 and 10 watts per candle-power. No care is exercised to protect the consumers of electric light and insure efficient satisfying service; but the gas consumer is protected by adequate maintenance, and so the British gas man never has been forced to face the situation that confronts us here.

Time for Action, and Its Benefits.—I believe that the time for action has come, and that the best interests of gas companies demand the maintenance of all gas lamps. There is no better system whereby this can be accomplished than by following the lead of the electric companies, and charging the cost of all material and labor expended for such work directly to the cost of producing the service, ultimately including it in the rate. I know many of you will say that your rate is so low that you cannot afford to do it, which is no doubt true in many cases; but let us begin in a small way and at least cease discriminating against gas light. Let us spend what little we can afford toward gratuitous maintenance that will automatically forstall any further cut in the gas rate; and as time goes on perhaps our surplus earnings will permit us to maintain all gas lamps free.

And there are other benefits. Such a maintenance service will result in constant friendly contact with your customer. Every month there will be opportunity to adjust all his little grievances before they grow larger. Every month there will be opportunity to add new influence toward the sale of more appliances, the gradual installation of complete equipments. It will enable you to dictate properly what lamps you would maintain, and to discourage the unscrupulous manufacturer and dealer in cheap lamps from imposing on your customers. It will give you the exclusive supply of mantles and glassware and enable you to demand the best grade goods at the lowest possible price, based on the larger quantity you use. It would discourage department stores, "5 and 10 cent" stores and peddlers from selling inferior mantles.

It is estimated that an active single burner gas lamp will consume 500 cubic feet of gas per month, and it should cost about 5 cents per month to maintain such a lamp. Taking this as a basis, an additional 10 cents per 1,000 cubic feet of gas sold for lighting would maintain all mantle lamps, and not only save the lighting business, but make it possible to actively compete safe-founded on the modern standard of a satisfying service.

I have considerable data from gas companies who are practicing free maintenance and I would like to lay these figures before you, but time will not permit me to cover all that detail here. I want, however, to give you an extract from a paper by Mr. Arthur Hewitt, General Manager of the Consumers Gas Company, of Toronto, Canada:

"I am convinced," he says, "that in the final analysis, gas companies will provide maintenance, either free or otherwise, for all gas consuming appliances; and in my judgment the more extensively this class of service is undertaken before the price of gas drops any lower, the better it will be for the gas company. The fact is, there would not be the same demand for lower prices for gas if the service rendered by gas campanies was ample and sufficient for the consumers' needs. I very much regret that this company ever reduced its price from 75 to 70 cents, as I am satisfied that the money represented by that 5 cents per 1,000 could have been spent with infinitely greater advantage to the gas consumers in additional service.

"Any gas company whose price is 75 cents or over, would do well to consider a free maintenance plan before cutting down the price of gas."

And the Greater Opportunity.—And remember, also, there is still great opportunity to increase the sale of gas for lighting. The novelty of the electric light is waning year by year, and the public are becoming more and more disposed to buy lighting service on the basis of its worth to them in comfort and convenience. Gas light can be sold with all the service that can be desired and still hold its advantage in point of price. But the service must be there and it must be expected and acknowledged and appreciated.

Let us no longer follow the slogan "*Millions for Sales and Advertising but not one cent for Maintenance.*" For, after all, the the greatest advertising influence in the world is service, and for

the consumer who uses gas for light, there never can be satisfying service without maintenance by the company. If his mantles begin to grow dim after a few months, you are not giving him the light for which he honestly pays, and every man of us well knows that no enduring prosperity can be sustained on such a policy. The world to-day exacts good service. It is the vital factor in your business.

Pure Water Gas Production.

An English patent has been issued to R. P. Picket, of Berlin, Germany, for a continuous water gas process, using pure oxygen, which is described as follows:

This invention relates to the production of a pure water gas—*i.e.*, a mixure of carbon monoxide and hydrogen; the chief object aimed at being to provide a continuous process in which the greatest economy of material and heat energy is obtained.

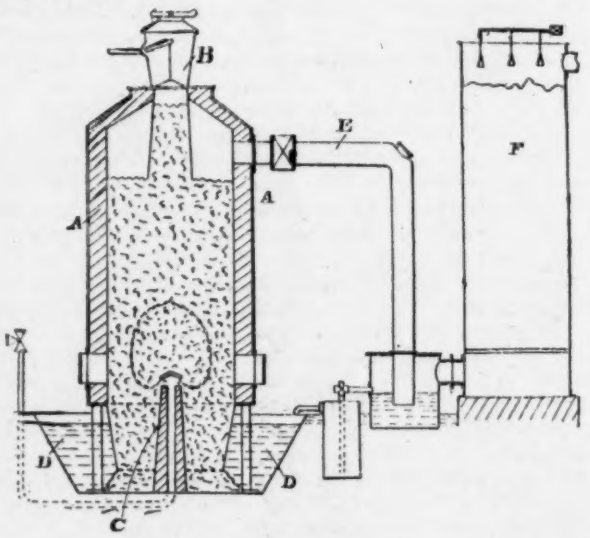
The ordinary method of producing water gas is an intermittent one; air being admitted to a generator containing the heated coke or anthracite, to raise its temperature to such a level (approximately 1,600° C.) that, on passing steam through the fuel, the steam is broken-up into hydrogen and oxygen. The latter combines with the highly-heated carbon to form carbon monoxide, which, together with the hydrogen, passes through a scrubber to a gasholder. The steam reaction absorbs a large amount of heat—58 calories per gramme molecule (18 grammes) of water producing 16 grammes of oxygen. The oxygen combines with 12 grammes of carbon to form 28 grammes of carbon monoxide, producing 26 calories—leaving a net loss of 58 — 26 = 32 calories of heat. The fuel thus soon falls in temperature, the steam must be cut off, and a fresh supply of air admitted to reheat the fuel. The heat is obtained on the admission of air chiefly by the formation of carbon dioxide—the result of complete combustion of carbon; and this, together with the nitrogen forming the bulk of the air, passes off hot—thus wasting a large quantity of heat. A substantial quantity of carbon monoxide is also formed, which may also be wasted; or in large installations, the blast gases may be employed for heating boilers or in internal combustion engines, by which the heat may be partly recovered. Moreover, in the steam reaction the liberated oxygen forms a certain quantity of carbon dioxide, which mixes with the water gas as an impurity. The proportion of carbon dioxide increases rapidly with the fall in temperature of the fuel, so that the reheating operation has to be started after only a moderate cooling of the fuel if fairly pure water gas is required. A further source of waste lies in the fact that, to avoid dilution of the water gas with the nitrogen and carbon dioxide in the generator at the end of the blowiug operation, a considerable amount of water gas must be wasted in displacing these waste gases.

According to this invention, pure, or nearly pure, oxygen is admitted in intimate mixture with the steam, in proportions that maintain the fuel continuously at the temperature necessary for efficient action (1500° to 1800° C. preferably, approximately, 1600°), as at this temperature less than 0.2% of CO_2 is found in the water gas. A mixture of steam and oxygen has before been proposed for the continuous production of water gas and by-products, but the conditions necessary for obtaining a pure water gas has not previously been realized—the chief condition being the continuous maintenance of the high temperature above referred to, in order that the desired reactions may be practically complete. By a process forming the subject of patent No. 9357 of 1913, the inventor claims to be able to obtain oxygen very cheaply, and this oxygen can be used in the water-gas generator, to produce economically a combustible gas of high efficiency. Since the oxygen and steam are admitted together in carefully regulated proportions, the reduction of temperature at any point of the fuel, which would occur from dissociation of the water molecules, is immediately compensated for by the partial combustion of the fuel to carbon monoxide by the excess oxygen present. There is, therefore, no actual fall in temperature if the proportions of oxygen and steam are correct. As has been already explained, there is a deficit of 32 calories of heat to be supplied for each 18 grammes of steam dissociated; and as each gramme molecule (16 grammes) of oxygen gives 26 calories by the formation of carbon monoxide, 19.7 grammes of oxygen are necessary for thermal equilibrium.

The following figures show the heat absorbed by, and supplied for, the various reactions, and the proportions of the oxygen and water required: Taking 1 kilo. of water in the form of steam as the standard quantity (55.56 gramme molecules of H_2O), the heat absorbed in dissociating it into hydrogen and oxygen is 3233 (55.56 × 58.2) calories, and the yield in gas is 1244 litres of hydrogen and 622 litres of oxygen. The hydrogen remains unchanged in the mass of fuel at (say) 1600° C, but the oxygen combining with the carbon gives 1244 litres of carbon monoxide. The latter reaction at 1600° C. generates 1450 (55.56 × 26.1) calories of heat, so that there is a net loss of heat of 3233 — 1450 = 1783 calories. The oxygen necessary to generate this quantity of heat by the formation of carbon monoxide is 764 litres—giving 1528 litres of monoxide. The total carbon consumed by the added oxygen and the oxygen derived from the water is approximately 1486 grammes (666.72 grammes burnt by oxygen from the water and 819.6 grammes by added oxygen), and tho volume of gases obtained is: hydrogen, 1244 litres and carbon monoxide 2772 (1244 + 1528) litres = 4016 litres in all. The total heat of combustion of this quantity of pure water gas is 11,740 calories; 1244 litres of hydrogen giving 3233 calories, and 2772 litres of carbon monoxide 8507 calories. A kilogramme of carbon would therefore yield gas giving approximately 7895 calories. One cubic meter of this gas would yield about 2923 calories. An allowance of 10% may be made for heat losses due to radiation, and the amount or oxygen supplied and carbon consumed will, for an actual apparatus, have to be correspondingly increased over the figures given above, which represent ideal conditions—resulting, of course, in an increased quantity of carbon monoxide in the water gas. The increased carbon monoxide would amount to about 280 litres (for each kilogramme of water used), making a total gas production of 4296 litres, with a calorific value of about 12,600 calories. The calorific value of the gas obtained per kilogramme of carbon consumed remains practically the same—approximately 7895 calaries.

As compared with the discontinuous process, and the continuous air and steam process, the calorific value of the gas obtained per unit of carbon consumed is between 2 or 3 times the value of that resulting from the discontinuous process (which produces a rich gas) and substantially greater than that of the old continuous process, which produces a relatively large volume of a poor gas. The new process is claimed to give a rich gas in much larger quantity than is obtained by the discontinuous process; and a little more than half the volume of the gas produced by the Mond process, owing chiefly to the elimination of nitrogen.

The accompanying diagram shows apparatus suitable for carrying out the process.



Picket's Water-Gas Generator.

A is the generator, lined with refractory bricks of silica, alumina, carborundum, or such like material, which is filled with coke through a double-valved hopper, *B*; and the ash is discharged at the bottom. *C* is a vertical tube of refractory material projecting into the lower part of the generator for supplying the mixture of steam and oxygen. *D* is a water seal for the bottom of the generator; *E* a pipe to the scrubber, *F*.

The coke is ignited as usual, and, as soon as the fire has started, a current of oxygen, with but little steam, is allowed to enter—raising the coke rapidly to a high temperature in the center of the generator. More steam is added progressively to the oxygen until the standard mixture is reached, and the gases pass into the scrubber F, and then to the storage holder.

To ensure good results, the following conditions should be complied with: The coke extends for a height of from 1 to 1½ metres

above the steam and oxygen supply, so that the steam may be entirely decomposed. The temperature of the coke through its entire height should be raised to 1,600° C. before the normal proportion of steam is admitted. The diameter of the generator must not be too great, as if the temperature of the coke at the wall should fall, part of the steam might pass through without decomposition, and the water gas would then contain carbon dioxide. The height of the coke should be kept as nearly constant as possible.

Utilization of Peat in Italy.

Several of the more important peat beds in Italy have been worked chiefly with a view of utilizing the peat as fuel. Most of the peat is, however, too poor to compete with imported coal. Attempts have also been made to use peat for other purposes, such as litter, packing, etc., but the quantities thus used are too small to be of any importance. Of late, however, the nitrogen contained in peat has attracted some attention. This nitrogen is in an inert condition in the raw material, and in order to utilize the peat as a manure the nitrogen must be transformed into a more active compound such as a salt of ammonia.

The idea of using peat in the water gas process was suggested by Dr. L. Mond, the first plant erected for that purpose being at Orentano The next important works of the kind were those of Osnabruck (Hanover), but owing to the difficulties connected with the preparation and drying of the peat, these works may be considered as being still in the experimental stage, as are the works started in England. The last works erected were at Codigoro, Italy, where all difficulties have been successfully overcome. In fact the only two important undertakings for the utilization of peat are those of Orento and Codigoro, belonging to the "Società per 'l utilizxazione del combustibill Italiani." The process adopted is the following: The peat, properly dried and broken, is thrown into turret-shaped ovens, 26 to 33 ft. high, called gas ovens, which is fed intermittently from the top. The peat burns only in the lower part of the oven, the combustion regulated by a jet of air and steam. The water vapor decomposed by the incandescent mass, produces water gas; or in this case Mond gas. It is produced at the lowest possible temperature, and the nitrogen evolved from the peat combines with the nascent hydrogen to form ammonia. The gas thus produced is washed to free it from tarry products and treated in a leaden chamber with sulphuric acid, converting the ammonia to sulphate; while the gas is purified, cooled and burned under the boilers and in the drying ovens or in gas engines. In this way about three-quarters of the nitrogen contained in the peat is converted into sulphate of ammonia. A peat containing 2.5% of nitrogen yields about 175 pounds of sulphate ammonia per ton. At Orentano 1,800 cubic feet of peat can be treated daily, yielding 50 tons of sulphate ammonia per month, and before long the output will be doubled.

The Codigoro plant is capable of dealing with 150 tons of dried peat daily, and of turning out from 10 to 12 tons of sulphate of ammonia per day. The peat beds at Codigoro are upwards of 2,500 acres in extent. The company has already spent £240,000 on the two factories, and can produce sulphate at 4s. 10d. to 5s. 7d. per cwt., while the market price is above 12s.

Recent Patent Issues.

Prepared for the American Gas Light Journal by Royal E. Burnham, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 20 cents.

1,125,210. Gas Shut-Off. L. W. Theis, Cleveland, O., assignor by mesne assignments, to S. H. Brooks, same nlace.

1,125,345. Oven for Generating Gas and Producing Coke. H. Koppers. Essen-on-the-Ruhr, assignor to H. Koppers Co., Chicago, Ills.

1,125,471. Safety Gas Light. J. L. Casler, Mansfield, O.

1,125,645. Gas Cock. F. M. Brooks, New York city.

1,125,676. Manufacture of Carbureted Water Gas. O. B. Evans, Philadelphia, Pa., assignor to The United Gas Improvement Co., same place.

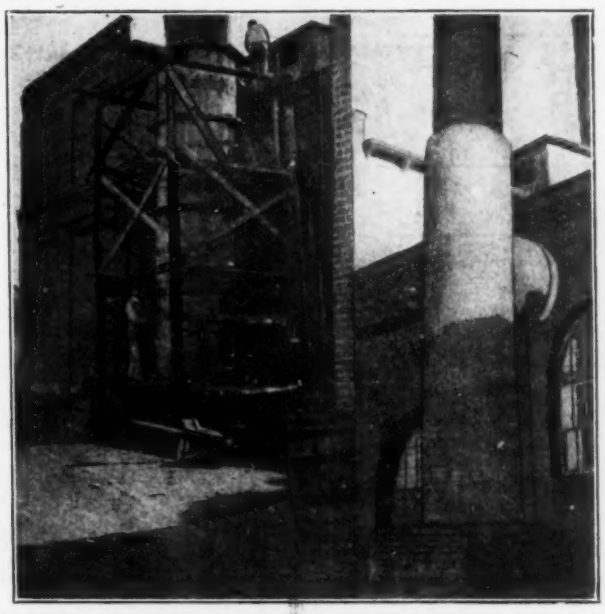
1,125,726. Lighting Device for Gas Stoves. H. Ruppel, Cleveland, O., assignor to American Stove Co., St. Louis, Mo.

1,125,882. Shutter for Gas Stove Burners. M. A: Possons, Cleveland, O., assignor to American Stove Co., St. Louis, Mo.

1,125,907. Combination Gas and Electric Lamp. A. H. Humphrey, New York city.

New Methods and Appliances.

Repairing a Corroded Steel Tank.—A 90-foot stack at the Borough Electric Works, Wallingford, Conn., showed signs of corrosion at about 6 feet above the base, where, in a band 6 to 8 inches high, the metal, which originally had been 5/16-inch thick, showed barely 1/32 inch. Circumstances made it imperative to continue it in use, and it was decided that the most convenient way to strengthen the weakened portion was to jacket it with reinforced concrete. The cut shows the jacket under construction and completed.



Forms in Place—Shell Completed.

Reinforcing rods ⅝-inch diameter were placed horizontally and vertically, 8 inches c. to c., and 3 inches from the shell of the stack —the intersections wire tied. The form, diameter 1 foot greater than that of the stack was built up in sections and the concrete mixed 1 cement, 2½ sand, 4½ broken stone, was poured very wet, because of the high temperature of the steel sheel.

The Hydraulic Blasting Cartridge.—Many mechanical substitutes for blasting have been devised to avoid the use of explosives, the simplest form being the wedge. The stub and feather and the multiple wedge had been used as improvements on the simple wedge and used in coal mines, but all had proved impracticable, and, except in the case of the simple wedges, were now practically out of use. The hydraulic mining cartridge works on a different principle. It consisted of a steel cylinder containing a number of telescopic pistons operating at right angles, expanded by water from a hand hydraulic pump attached to the cylinder. The cylinder is inserted in a drilled hole, and the rock removed gently.

As the operation proceeds it is possible to see the rock slowly fracturing, and at the conclusion of the operation the debris is left in condition suitable for speedy removal. Explosives do not take advantage of the natural bedding and cleavage of rocks, their violence being expended on "hacking through" to the nearest unsupported edge. With the hydraulic cartridge it is possible to excavate greater areas at one operation, the weight of the detaching strata itself increasing the scope of the operation.

The hydraulic cartridge is used to a large extent for (*a*) commercial reasons; (*b*) safety; and is equally applicable to work in open trenches or under water. In removing concrete by this method it is necessary to remember that there was a wide difference between concrete and stratified rock. In the latter there is only slight crushing before the pressure caused the mass to crack; whereas in concrete considerable pumping has to be done without any apparent effect, due to the crushing or compressing that the mass will stand before breaking.

Concrete breaking is particularly well done by this machine: horizontal and vertical shots arranged at intervals round the mass and pumped off in turn.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

CHARLES D. LAMSON, President of the Worcester (Mass.) Gas Company since 1888, died on the 12th inst. from a cerebral hemorrhage, aged 73 years. Mr. Lamson was born in Cambridge, Mass., April 11, 1841, and completed the engineering course in the Lawrence Scientific School of Harvard University in 1866. He entered the employ of the Boston Gas Company, and rose to be Superintendent of the company, which position he filled at the time of the big Boston fire in 1872. He took charge of the Worcester Gas Company as President and General Manager in December, 1888. He is survived by his widow and two children, Dr. Paul D. Lamson of Johns Hopkins University, and Mrs. Lawrence D. Chapin of Springfield.

MESSRS. C. H. TENNEY & Co. have contracted with the Davis & Farnum Manufacturing Company of Waltham, Mass., for the erection at the plant of the Bristol and Plainville Tramway Company, Bristol, Conn., of a 250,000 cubic foot gas holder, resting in a steel tank.

THE New York Section Gas Meeter's February meeting is their annual reception to the ladies, and will include a banquet, a bargain auction and a dance, on the night of February 24th, in the Green Room at the Hotel McAlpin, Greeley Square. The announcement says, "Get together at 7 o'clock, enjoy a feast of good things such as a McAlpin always assures, and be entertained as you eat. After that an auction of mysterious packages, with our own "Brock" the "Village Wit" as auctioneer, assisted by a bunch of good Meeters; then dancing until you've had enough. The following bargain prices will prevail:

One Meeter and his best girl.....	$4.98 and 2 packages
Extra girls, each.....	2.29 and 1 package
Meeters or guests without girls...	2.73 and 1 package

NOTE: If you haven't a best girl, be sure and come, you'll "Meeter."

Everyone must bring a package; what's inside the wrapper and its cost is up to you, the contents may be useful, ornamental or funny, just as you elect, the only thing we specify is that the package be unmarked so as not to identily it or its contents.

MR. GORDON MYERS has been appointed manager of the Seneca Falls (N. Y.) Division of the Empire Gas and Electric Company. Mr. Myers was formerly connected with the Auburn office of that company.

PROFITS of the Salina (Kas.) Light, Power and Gas Company will be used for improvements of the company's plant. This was decided at a meeting of the stockholders and directors of the company. The amount to be expended this year will be between $30,000 and $40,000. The company plans to build another extension to its plant and an additional boiler will be installed. Similar improvements were made last year but it seems the growth of the business in Salina has been such that another addition is warranted. The following directors were re-elected: Thomas H. Smith, J. F. Springfield. Walter Grundy, Frank Frueauff and J. E. Harsh.

MR. LEROY BENEDICT, who lately resigned as chief engineer of of the Northampton electric lighting plant, has accepted the position of commercial manager of the Athol (Mass.) Gas and Electric Company.

THE new board of directors elected by the New Haven (Conn.) Gas Light Comyany re-elected all the officers for the ensuing year, namely, president, Charles H. Nettleton; vice-president, George D. Watros; secretary and treasurer, J. Arnold Norcross, and engineer and superintendent, Robert E. Wyant.

SIOUX FALLS' (S. D.) proposed establishment of a standardization bureau under the direction of the city plumbing inspector has reached the point of introducing an ordinance regulating the manufacture of gas and service by the Sioux Falls Gas Co. Satisfactory prices on the testing apparatus needed have been obtained, and the next step is the authorization of purchase and the passage of a law governing standards. "The idea of the ordinance will be to insure the customer the best quality of gas the company is able to supply at a reasonable profit," said Inspector Smith. The gas, under the plan of standardization adopted from the U. S. Bureau of Standards, will be tested for heat units, pressure and impurities, and the meters also will be tested.

MR. SAMUEL T. BODINE, president of the United Gas Improvement Company, has sent to the Philadelphia councils the company's plan for transforming 11,140 gasoline lamps throughout the city to incandescent gas lamps, a matter which has been pending for more than a year. Mr. Bodine said that the company would convert 3,700 gasoline lamps along the present lines of mains into gas lamps, and 7,400 more on streets and alleys not now served by gas, and operate them at the rate of $25.75 per lamp per year. The company will return the usual percentage of consumption to the city, basing it on an estimated consumption of 14,000 cubic feet per lamp per year.

THERE was an attendance of more than 70 members of the Fall River (Mass.) Gas Works' Company Employees' Association at the last monthly meeting. After the regular order of business had been disposed of under the direction of President Robert B. Clarke, Mr. George Gilbert, of the company, made some remarks relative to remodelling the basement in the office building with the idea in view of establishing a permanent club room for the association. After questions of interest in the daily routine of business had been discussed, Manager Joseph E. Nute made a few remarks noting the history and growth of the company since he became manager. There was a program of vocal and instrumental numbers and refreshments. Edmund Bottomley and William Hitchin presided at the piano, and solos by Messrs. Hawes, Brown and Driscoll were well applauded. A quartette composed of Messrs. Brown, Brownell, Driscoll and Hawes gave three selections. A number which caused some merriment was a cake walk by Driscoll and Johnson. After refreshments a general discussion was in order until the meeting adjourned.

THE Providence, R. I., city council are discussing the rights of the Providence Gas Company to maintain equipment in the streets of the city without a franchise from the city, and it was said a resolution directing the City Solicitor to give the council an opinion on the rights of the company will be presented at the March meeting. The Providence Gas Company's franchise in the city expired August 8, 1912, and since that time the corporation has been operating without a grant.

D. W. HANSSEN, superintendent of the Citizens Gas Company, Carroll, Ia., was reminded of the passage of time last week when a number of his gentlemen friends came in upon the quiet of his home and proceeded to celebrate his birthday. Mrs. Hanssen was in the conspiracy and helped the guests to make the evening entertaining. "Dan" was given a handsome present as a remembrance of the occasion.

AN interesting case is reported from a southern city. During the months of May, June, July and August, it is claimed by the petitioner, his family was away and his home was not occupied. In spite of this fact bills were rendered for $1.35 gas service for each month, which he refused to pay. The gas company admitted there was a leak in the house pipes but insisted upon payment, and it is claimed determined to discontinue the service. The consumer offered payment for the succeeding months, which the company refused to accept until the bills for the months the home is alleged to have been unoccupied were paid. The petitioner, it is claimed, refused to make payment for gas he asserts he did not use. Unless the Court gives remedy, the petitioner alleges he will suffer damages at the hands of the Gas Company.

THE Grand Rapids (Mich.) Gas Company, at its annual meeting, elected the following officers: President, Emerson McMillin; Vice-President and General Manager, John T. Young; Vice-President, A. P. Lathrop. The Directors are these officers and William H. Anderson, Henry Idema, T. J. O'Brien, L. H. Withey, J. Boyd Pantlind and Henry Sullivan. The Secretary is Glenn R. Chamberlain; Treasurer, John T. V. Hulswitt; Assistant Secretary and Treasurer, C. N. Jelliffe, New York.

IT is announced that plans are ready for the building of 4 gas factories in Chehalis County, Wash., towns at a cost of oppoximately $250,000 by the Gas Service Corporation of America, which now has a factory in operation in Auburn. The first of the new factories will be built at Montesano, and construction of a second plant in Aberdeen will start this Spring. Plants in Hoquiam and Elma will follow. The gas will be made from wood, and if present experiments prove as successful as anticipated waste wood and

sawdust will be used. Under the franchise all the factories must be in the course of construction before January 1, 1916. The towns are guaranteed gas at a maximum rate of $1 per 1,000 cubic feet.

ENGINEER LILLY, of Lincoln, Ills., who has been working since August making appraisals of the properties of the Lincoln Water and Light Company and the Logan County Gas Company, has comp'eted his work. The estimates will be used by the city in the State Public Utilities Commission cases, directing rate inquiry.

RATON, NEW MEXICO, people are being urged to return favorable answers to the canvass which the electric company is conducting to determine the feasibility of establishing a gas plant. Of 700 cards sent out 250 have so far brought favorable answers, which is practically the only kind that have been received. The plant involves an expenditure of $40,000 or more, and the backers do not want to go ahead without sufficient indication of popular support.

THE annual meeting of the stockholders of the Peoples Gas Light and Coke Company consisted merely of the acceptance of the report of the company, already published, and approving the acts of the directors and officers for the past year. Directors to serve 3 years were elected last year. In the absence of Samuel Insull, chairman of the board, and President Meagher, Vice-President Cowdery presided at the meeting. It was stated that 61% of the stockholders reside in Chicago, representing 54% of the stock of the company.

THE Rockford (Ills.) Gas Light and Coke Company has inaugurated an inspection of all gas appliances. Their notice says: "From our observations of appliances in the homes of consumers, we learned that many were not being used because the owners were not securing good results from their operation. In some instances we found the consumers considered this could not be corrected, and as a result did not notify the company. We intend to continue sending men on request, but in addition we are going to send men from house to house, to inspect the gas appliances in the homes of our consumers. Each inspector will wear a badge, and when calling will present a card bearing his name and photograph. We ask that he be allowed to inspect the gas lamps, gas ranges, gas water heaters, gas irons and other gas appliances you may have. He will adjust and leave them in good condition. If any material is supplied at your request a charge will be made for the material only."

WILLIAM S. JAMES, who for eight years has been connected with the Frederick (Md.) Gas and Electric Company and the Frederick Gas aud Electric department of the Hagerstown and Frederick Railway, has been promoted to the office of New Business Manager of the Gas and Electric department. Mr. James' position is a new one just created by the company, and he will assume his new duties on March 1.

THE Tower City Gas Company, with right to operate in Tower borough and Forter township, Schuylkill county, Pa., was chartered with $5,000 capital by G. G. Gochanauer and J. M. Rudy, Harrisburg, and N. B. Reeser, Newville.

NOT only has the Southern Gas and Electric Company, which controls the Henrico County Gas Company, the right to excavate in the streets and alleys of the annexed towns in Henrico County, Va., but the city of Richmond has no right to levy taxes on the company for maintaining and operating its pipe lines; City Attorney H. R. Pollard rules. The Henrico Gas Company has franchise rights to operate in the streets and alleys of Highland Park, Ginter Park, Barton Heights and North Richmond. All of the franchises were granted in 1913 and run for thirty years.

THE American Gas Construction Company, Newton, Ia., has petitioned the common council of Marshfield, Wis., for a franchise to build a gas plant with fifteen miles of mains; with the alternative of building a municipal plant of the same size for the city for about $52,000.

THE employees of the North Adams (Mass.) Gas Light Company, Williamstown Gas Company and Adams Gas Light Company have organized a joint association. The following officers were elected: President, Thomas G. Henderson; Vice-President, Charles Palmer; Secretary, L. F. Maroni, and Treasurer Patrick Doherty. Committees were appointed to obtain regular meeting quarters and provide entertainment for meetings which will be held once a month. The organization starts off with 55 members, and is designed to promote co-operation and sociability.

UTILITIES COMMISSION NEWS.

RATE SCHEDULES MUST BE FILED ANG POSTED.—One of the most far-reaching orders that the up-state New York Public Service Commission has issued is now in effect, requiring the rate schedules of all gas and electric corporations and all municipalities subject to the regulation of the Commission to be filed in the Commission's office, and also to be kept in convenient form for the inspection of customers at all offices of such corporations and municipalities where contracts for service are made, or payment for services received.

This order follows out the plan of the Commission in regulating other corporations under its control, and requiring the fuller publicity of all rate schedules in order to prevent discrinination. The order specifies that the rate schedules are to be printed in uniform form, and that when asked for by a customer the person having charge of them in the corporations office shall give all necessary assistance in gaining information therefrom. The schedules include not only rates, present or proposed, but regulations for service and and privileges and facilities under each rate.

GAS COMPANY PAYS CITY LEGAL EXPENSES. In the case of the city of Joplin, Mo., against the Joplin Gas Company and the bond of an injunction suit brought by the corporation against the city, a settlement has been effected by which the city was given $250. The city had sued the company to recover money paid out in the injunction suit brought against the city by the corporation to prevent the prosecution of the gas company, when a raise of gas rates was to have been effected. Later the injunction was dismissed, and city officials, believing the company should pay its expenses in the injunction proceedings, sued for its costs.

NEW YORK METER DEPOSIT REGULATIONS. The Public Service Commission, First District, has adopted an order directed to gas corporations requiring them to obey the regulations laid down in the order governing deposits made by consumers. The order is addressed to twenty-one gas companies mainly controlled by the Consolidated Gas Company in New York and the Brooklyn Union Gas Company.

The proceedings of which this order is the outcome was begun last year following the receipt by the commission of replies to inquiries as to the number and amount of consumers' deposits.

The Transportation Corporations Law authorizes gas and electric corporations to require a deposit from intending consumers equal to about two months lighting bills, and provides that each company "shall allow and pay to every such depositor legal interest on the sum deposited for the time his deposit shall remain with the corporation." The replies showed that at the close of 1913 the Consolidated Gas system had on deposits $1,082,068.21; the Brooklyn Union system $1,195,630.56, and five independent companies $279,474.54, a total of $3,553,173.31. The total number of active meters reported was 1,359,527, indicating that about one consumer out of every three is required to make a deposit, and that the average deposit is about $7. It is the practice of all, except one, to pay interest only when a deposit is withdrawn. The order imposes upon the companies among other obligations:

To keep a record of each deposit, in accordance with the uniform system of accounts, and such further records as will show the name of the consumer making the deposit, his location at the time and each successive location as long as he remains a consumer and depositor; the date of making the deposit, its amount and a record of each transaction concerning such deposit.

To allow and to pay or credit every depositor legal interest at the rate of 6% per annum for the time the deposit remains with the corporation.

To allow each depositor when he ceases to be a consumer to withdraw his deposit and all accrued interest after payment of all bills for which the deposit is security, mere change of residence not to be sufficient cause for requiring a new deposit.

MINIMUM ALLOWED ON PREPAYMENT METER.—An Oklahoma Superior Court has decided that the Muskogee Gas and Electric Company has the right to charge a minimum of 50 cents a month for gas consumed. The complainant had a quarter slot-meter in his home, and the company sought to collect the minimum charge when he had not consumed that much gas, and he secured an injunction restraining the company from cutting-off the supply.

It was contended that the petitioner had the right to put the deficit under 50 cents in this meter, thus securing additional gas, but this was not allowed by the court.

Financial Notes.

THE annual report of the CONTINENTAL GAS AND ELECTRIC CORPORATION, Cleveland, O., for the year ending Dec. 31, shows that additions and betterments of $992,949 were made, including the purchase and control of the Oakland (Ia.) Electric Company, the Nebraska Gas and Electric Company, the Iowa Gas and Electric Company and the Avoca (Ia.) Electric Light and Power Company. The company has had a year of unusual prosperity, the communities served not being affected by the unsettled conditions that have obtained elsewhere. Following is a summary of operations:

	1914.	1913.
Gross earnings	$550,330	$321,052
Operating expenses	352,868	184,918
Interest on outstanding bonds of subsidiary companies	5,790	5,790
Balance	$191,672	$130,344
Interest on company's outstanding bonds	64,525	37,125
Balance	$127,147	$93,219

THE SOUTHERN PUBLIC UTILITIES COMPANY has sold $2,600,000 of its first and refunding mortgage 5% gold bonds due July 1, 1943, to William Morris Imbrie & Co., the company's fiscal agents. The company owns and operates electric power and lighting plants, gas plants, electric street railway lines and water works supplying sixteen cities and towns in the Piedmont section of North and South Carolina. It is controlled by the same interests which control the Southern Power Company.

THE PEOPLES GAS LIGHT AND COKE COMPANY earned $16,800,538 in the year ended December 31, a decrease of $25,000 from 1913. Through economy, $6,789,504 was saved as net, a gain of $371,916. After paying interest and dividends and allowing for depreciation, $327,694 surplus remained compared with $349,694 in the preceding year.

THE MINNEAPOLIS (Minn.) GAS LIGHT COMPANY did a gross business in 1914 of $2,169,573.75, leaving net earnings of $517,598.21, and after paying bond interest and putting $147,000 into the sinking fund, left undivided profits for the year of $51,716.73. The increase in net earnings from operation was $37,259.52 over 1913, and the cost of operation was $48,097.05 greater than in the year before. The report shows that at the end of the year 38,396 persons were served with gas, 10,991 with electricity and 33 with steam. The total number of employees of the company is 575. Assets of the company are given at $9,787,430.49, with liabilities at the same figure. The American Light and Traction Company of New York is given as the owner of all but $800 of the capital stock of the company. Stockholders in St. Paul are C. L. Kluckhohn, E. A. Young, Paul Doty, Kenneth Clark, G. H. Price and J. P, Crowley, each of whom owns one share.

AT the annual meeting of the SALEM (Mass.) GAS LIGHT COMPANY the annual reports were presented and accepted, showing the company to be in a satisfactory condition, considering its heavy losses in the conflagration of June 25. Henry A. Hale was elected President, Benjamin W. Sluman was chosen Treasurer, and the following Directors elected: Henry A. Hale, Charles F. Pritchard, Andrew W. Rogers, John H. Smith, Sydney W. Winslow and George W. Grant.

CHARLESTOWN (Mass.) GAS AND ELECTRIC stock sold at 136½ last week, an advance of 10½ points over last reported sale. On its $600,000 capital this company in 1914 paid 10% regular dividends and an extra of 5%, this taking only $90,000 of its $124,330 of net earnings. Its earnings are at the rate of over 20% on its capital, and it nets the purchaser at $135, 5.56%. Its earnings and dividend records for the last four years show:

	Gross.	Net.	Div.	Rate per cent.
1911..	$353,236.04	$ 89,328.92	$60,000	10
1912..	376,325.07	103,874.64	75,000	10 & 2½ ex
1913..	399,276.00	115,518.00	84,000	10 & 4 ex
1914..	422,328.00	124,330.00	90,000	10 & 5 ex

AN increase over the preceding year of $51,572.04, or 2.5%, is shown in the 1914 net earnings of the LACLEDE GAS LIGHT COMPANY, according to the annual report. Gross earnings were $4,629,689.10, an increase of 2.1% over 1913. Operating expenses also were heavier, aggregating $2,245,591.77, or 1.7% more than in 1913. Dividends on common stock at the rate of 7%, totaling $749,000, were paid during the year. and the regular 5% dividend was paid on preferred stock. Total expenditures covering additions to the plant equaled $1,992,445.37, making the total plant and investment now $35,940,296.10. The report informs stockholders that the property has never before been in so sound a condition, and the prospects for 1915 are exceptionally bright.

CONTENTS.

AN ASTERISK (*) DENOTES AN ILLUSTRATED ARTICLE.

*OFFICE BUILDING OF THE NEW BEDFORD GAS AND EDISON LIGHT CO 113
THE BY-PRODUCT COKE OVENS AT CHATTANOOGA, TENN.. 114
ADDRESS OF MR. THOMAS N. MCCARTER AT THE MINNEAPOLIS CONVENTION, N. C. G. A 115
EFFECTS OF GAS LIGHT UPON COLORED FABRICS..... 116
*REPORT OF N. C. G. A. COMMITTEE ON OUTDOOR GAS LIGHTING, by Alonzo P. Ewing..... 117
FREE MAINTENANCE OF ALL GAS LAMPS BY THE GAS COMPANIES, by Mr. J. P. Conroy..... 119
EDITORIALS 120
American Coal Tar Dyes—Municipal Ownership Not So Popular—Illuminating Engineering Society Meetings.
FORTY-FIFTH ANNUAL MEETING, NEW ENGLAND ASSOCIATION OF GAS ENGINEERS—[Special Telegraphic Report.] 121
OFFICIAL NOTICE—
The Empire State Gas and Electric Association..... 121
*PURE WATER GAS PRODUCTION..... 124
UTILIZATION OF PEAT IN ITALY..... 125
Recent Patent Issues..... 125
NEW METHODS AND APPLIANCES 125
*Repairing a Corroded Steel Tank—The Hydraulic Blasting Cartridge.
ITEMS OF INTEREST FROM VARIOUS LOCALITIES..... 126
Mr. C. D. Lamson Dead—Holder Contract to Davis & Farnum Mfg. Co.—New York Gas Meeters—Mr. Meyers at Seneca Falls—Salina, Kas., Plans and Officers—Another Personal—New Haven, Conn., Elections—Sioux Falls Inspection Department—Mr. Bodine Ready—Fall River Employee's Association—Providence Company Operating Without Franchise—Mr. Hanssen Reminded—Won't Pay for Gas Leakage—Grand Rapids Officials—Wood Gas Plants—Lincoln, Ills., Valuations—Do You Want Gas?—Peoples Gas Meeting--Rockford Inspection Service--Mr. James in Charge—A Pennsylvania Charter—Henrico County Company in Richmond, Va.—Marshfield, Wis., Propositions—And Other Items.
UTILITIES COMMISSION NEWS..... 127
Rate Schedules Must be Filed and Posted—Gas Company Pays City Legal Expenses—New York Meter Deposit Regulations—Minimum Allowed on Prepayment Meter.
Financial Notes..... 128
Public Lighting Table for March, 1915 (Ad. Section)..... 22
Meeting Times of the Various Gas Associations (Advertising Section)..... 23